

Running Head: T-NEX IMPLEMENTATION

Case Study: Preparing The Gastroenterology Clinic at Naval Medical Center San Diego

(NMCSD) for T-NEX Implementation

A Graduate Management Project

Submitted to the Faculty of

U.S. Army-Baylor University

by

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Abstract

The objective of this study was to develop a strategy to prepare for the next generation of managed care support contracts at the clinic level. The study will identify areas of concern within the Gastroenterology (GI) clinic that result in the loss of Prime patients to the contractor, determine if those losses are appropriate, and recommend possible solutions and better business practices. The study analyzed data involving a five-step process that includes evaluating resource allocation and productivity, referral tracking and variation, provider profiling, appointment utilization / template management, and costs. Based on this study, the clinic should increase bookable hours for staff providers from six to seven hours. The clinic should also continue with the revised referral / disengagement process currently in place and continue to provide education and training to primary care providers. Through analysis of in-house and network costs, 13 procedures and diagnoses were identified that should be either performed in-house or referred to the network that result in a cost savings to the GI clinic of over \$90,000. By referring these procedures to the network, access and capacity will be greatly improved.

Table of Contents

Acknowledgements	2
Abstract	3
Introduction	7
Conditions Which Prompted the Study	9
Statement of the Problem	10
Literature Review	10
Purpose	18
Methods and Procedures	18
Results	24
Resource Allocation and Clinic Productivity	24
Referrals / Referral Variation	27
Provider Profiles	32
Appointment Utilization / Template Management	33
Costs Associated with Referrals	34
Discussion	38
Conclusions and Recommendations	46
References	49
Appendix A. (Explanations of Abbreviations, Symbols, and Terms)	52
Appendix B. (NMCSD Disengagement Report for August 2003)	59
Appendix C. (GI Clinic Referral / Consult Process)	65

List of Tables

Table 1. (Assumptions for TAD, Leave, Holidays and Physical Training)	66
Table 2. (Assumption of Salaries)	67
Table 3. (Expected Unit Production)	25
Table 4. (Descriptive Statistics for Age, Gender, and Beneficiary Categories)	68
Table 5. (Inferential Statistics for Age, Gender, and Beneficiary Categories)	69
Table 6. (GI Clinic Appointment Utilization)	33
Table 7. (Available Appointments for Gastroenterology Clinic)	70
Table 8. (CPT Codes – Make vs. Buy (Unit Cost))	44
Table 9. (ICD-9 Codes – Make vs. Buy (Unit Cost))	45

List of Figures

Figure 1. (Total Time Distribution for GI Clinic Staff Provider)	26
Figure 2. (Total Labor Costs by Staff Member)	26
Figure 3. (Active Duty Network Referrals)	28
Figure 4. (Prime Network Referrals)	29
Figure 5. (Primary Care Consult Trends)	32
Figure 6. (Top Ten CPT Codes by Visits)	34
Figure 7. (Top Ten CPT Codes by Costs)	35
Figure 8. (Top Ten ICD-9 Codes by Visits)	36
Figure 9. (Top Ten ICD-9 Codes by Costs)	37
Figure 10. (Staff Provider Case Mix)	42

Case Study: Preparing The Gastroenterology Clinic at Naval Medical Center San Diego for T-NEX Implementation

Introduction

The purpose of this study is to develop a strategy to prepare for the next generation of managed care support contracts at the clinic level. The GI clinic was selected due to the clinic's high volume of disengagements to the network. The study will identify areas of concern within the Gastroenterology (GI) clinic that result in the loss of Prime patients to the contractor, determine if those losses are appropriate, and recommend possible solutions and better business practices. Additionally, this study hopes to improve clinic manager knowledge and education at NMCS and to add to the body of knowledge in T-NEX and Revised Financing studies.

In July 2004, when healthcare delivery begins under the next generation of regional TRICARE contracts (referred to as T-NEX) healthcare purchasing in the commercial sector for Prime enrollees will more directly impact the financial bottom line of Military Treatment Facilities (MTFs) and their outpatient clinics. Prime enrollees are beneficiaries who have committed to be seen first at the MTF. This will affect the way military healthcare professionals view their responsibilities. While primarily focusing on providing the highest quality preventive and interventional healthcare, military medical professionals will play an increasingly important role in the management of healthcare dollars. MTF commanders will be funded, and financially responsible, for the healthcare purchased in the commercial sector for their Prime enrollees. This is important because up to this point, healthcare received in the commercial network was centrally funded by the Defense Health Program (DHP) appropriation and had no impact on the MTF's bottom line.

Revised Financing is the fiscal environment in which the MTF receives capitated funding for all TRICARE enrollees, which is designed to cover the MTF and/or TRICARE Managed Care Support Contractor (MCSC) network care costs for the fiscal year. Under Revised Financing, the MTF assumes financial responsibility to perform all care requirements of enrollees for receipt of the capitated payment from the respective military department. Revised Financing has been a part of military medicine for four years. All MTFs in the East Coast regions 1, 2, and 5 have been dealing with revised financing for four years, but under T-NEX this fiscal model will be the rule for all TRICARE Regions (Munter, 2003). Since NMCS D has not dealt with this type of financing, it is important that the command begins to prepare for the impact on their bottom-line.

NMCS D Gastroenterology Clinic

The GI clinic at Naval Medical Center San Diego is a outpatient specialty clinic that provides inpatient and outpatient care to patients requiring GI services. The clinic treated over 9,000 patients in fiscal year 2003. The clinic staff includes four staff gastroenterologists who oversee six fellows through three years of residency training in gastroenterology. All providers are active duty military. The four staff providers are all Navy Captains (O-6) and the fellows' ranks range from Navy Lieutenant Commander (O-4) to Lieutenant (O-3). The clinic currently has no resource sharing agreements with the managed care support contractor. All providers perform a variety of GI procedures and see follow-up patients as well as new patients to the clinic. The year of residency dictates what types of procedures and appointment types that the resident can see. However, all appointments fall under the responsibility of the staff providers.

The clinic's nursing staff consists of both military and government employees. There are five nurses, of which three are military (LCDR to LTJG) and two civil service Registered Nurses

(RN) (Grade GS-10). There also is one Licensed Vocational Nurse (GS-6). The nurse's duties are to provide clinical support to include intravenous sedation, preoperative care, postoperative care, and patient education.

The clinical support staff consists of eight active duty hospital corpsmen with ranks ranging from Hospital Apprentice (E-2) to Hospital Corpsman Second Class (E-5). The support staff covers all clinical areas as well as administrative functions within the clinic in support of the staff providers. The support staff does not receive any special Navy medical education to work in the GI clinic. They are general duty corpsman with no specialized training, and primarily junior in rank.

The clinic primarily books all appointments under three general appointment types: PROC (procedures), EST (follow-up appointments), and SPEC (specialty or new appointments). The three different types of appointments have different time durations based on complexity of case or procedure. All staff providers are able to see all three types appointments.

Conditions Which Prompted the Study

In most regions, when TRICARE Prime enrollees are referred to commercial resources for specialty care, the managed care support contractors (MCSC) pay for this care using "at risk" funds. "At Risk" funds are DHP dollars that MCSC manage subject to utilization management criteria, which they apply, based upon best commercial practices of Department of Defense (DOD) requirements. If they manage the "at risk" funds effectively, this positively affects their financial bottom line. MTFs have little visibility on how the funds are managed and the process has had little impact on MTF operations. Under T-NEX, the MCSC will no longer manage "at risk" funds. The MTF funding base will include dollars, based upon historical experience, presumably sufficient to purchase healthcare services where this is appropriate for their

TRICARE Prime enrollees (Tinling, 2003). It is very important that the MTF outpatient clinics begin to prepare now for this enormous change.

Evans (2003) shows that although the managed care support contractors will still manage the flow of money, they will not specifically provide utilization management oversight. Utilization management oversight is the regulation of the provision of services in relation to the capacity of the healthcare system and the needs of the patients. They will process the claims, but the money to cover the claims will come from the MTF, not from some contractor “at risk” pool. This will present some real challenges to NMCS D leadership as those currently working in the Revised Financing regions (1,2, and 5) appreciate already.

NMCS D’s GI Clinic will have a major role to play in utilization of services, both inside and outside the MTF. The clinic will need to become more focused on the business aspects of healthcare. NMCS D, including the GI Clinic, needs to optimize and utilize resources appropriately to prepare for Revised Financing under the next generation of TRICARE contracts.

Statement of the Problem

Should the GI clinic at Naval Medical Center San Diego (NMCS D) recapture TRICARE “Prime” patients to prepare for the implementation of Revised Financing and T-NEX? If so, which patients should the GI clinic attempt to recapture? If not, what other areas should the GI clinic focus on for T-NEX implementation?

Literature Review

In this section, we will discuss two specific areas: TRICARE and management of process change. These issues directly affect one another when evaluating a clinic for the new T-NEX contracts. While the background of TRICARE and the impact of revised financing to NMCS D is important, it would be very difficult to fully explore this project without discussing the impact

that process change might have on the clinic. How the clinic staff responds to this change can greatly affect this project's success. It will require a change in culture in the clinic and a change in the mindset of the leadership as they manage the clinic through the process.

TRICARE. The Department of Defense's (DOD) nationwide managed care program, called TRICARE, is intended to improve the military community's access to healthcare while maintaining quality and controlling costs. DOD's approach involves a unique partnership between military and civilian healthcare entities. DOD's primary medical mission is to maintain the health of 1.6 million active duty personnel and provide healthcare during military operations. Also, as an employer, DOD offers healthcare to 10.1 million other military-related beneficiaries, including dependents of active duty personnel and military retirees and their dependents. Most care is provided in about 115 hospitals and 470 clinics worldwide, operated by the Army, Navy, and Air Force. In fiscal year 2004, DOD expects to spend about \$16.5 billion providing care directly and about \$5.5 billion for care in civilian facilities (Ford, 2003).

In response to increasing health care costs and uneven access to care in the late 1980s, DOD initiated, under congressional authority, a series of demonstration programs to evaluate alternative healthcare delivery approaches (Cohen, 2001). On the basis of experience, DOD designed TRICARE as its managed healthcare program. The TRICARE program currently uses regional managed care support contracts to augment its MTF's capacities by having contractors perform some managed care functions, including arranging for civilian sector care. As of March 2004, there are seven managed care support contracts that cover eleven TRICARE regions. To coordinate MTF and contractor services and monitor care delivery, each region is headed by a joint service administrative organization called a Lead Agent (Leaders, 2003). Under T-NEX,

the seven MCSC will be reduced to three regions with three contractors. The Lead Agent will also be replaced by a TRICARE Regional Office.

The DOD's Revised Financing approach is intended to strengthen Military Treatment Facility (MTF) health care management. Under this approach, the MTFs' direct funding and financial responsibilities will be increased to account for the healthcare responsibility of all eligible members within that MTF's catchment area. The funding increase will be determined by the amount of previous DHP expenditures for MTF-based TRICARE "Prime" enrollees, whom DOD expects will comprise most of an MTF service area's beneficiaries. Rather than sharing responsibility for Prime enrollees with the support contractor, the MTFs will have full funding and full responsibility for their Prime enrollees and will pay the contractor for care provided in the contractor's network.

One result of this approach is to reduce reliance on Resource Sharing to lower support contract cost; but it also adds new challenges and does not eliminate, and may even exacerbate, Resource Sharing problems (Eden, 2003). Resource sharing is an agreement between a contractor and an individual MTF commander to provide or share equipment, supplies, facilities, or staff who are under contract or are employed by the contractor for work in the MTF for the purpose of enhancing the capabilities of the MTF to provide needed patient care to beneficiaries.

Christopher (2003) shows that giving the MTFs direct financial responsibility for TRICARE Prime enrollees is aimed at providing them with clearer incentives to efficiently manage care use and behave more like private sector HMOs. DOD saw the need for this while still arranging the earlier managed care support contracts and later viewed it as a way to relieve emerging resource sharing problems. But, under Revised Financing's current approach, DOD will continue sharing care costs with the contractor for beneficiaries not enrolled with the MTFs.

Also, the MTFs will continue working with the new contractor toward signing Resource Sharing agreements. Thus, as the contractor's reliance on resource sharing continues, the difficulties already experienced are also likely to continue.

DOD believes Revised Financing gives MTFs added cost-saving incentives to engage in Resource Sharing by reducing the need for referral of their enrollees to the TRICARE support contractor. However, KPMG (2000) felt that Revised Financing might add further complexity to resource sharing use. Because the effects of the new approach's potential efforts on resource sharing are not yet known, TRICARE contract offerors must make their own assumptions and projections. Much depends, for example, on how MTFs' funding levels may change and the consequent alterations in their beneficiary service priorities. And the added extent of funding going to MTFs rather than their contractors will in turn depend on the MTF's capacities and ability to enroll beneficiaries and serve as their primary care manager (McGuire, 2003).

Deployment of medical personnel to combat and operational support from the facility also can have an effect on the MTF's capacity. If they have a large number of providers, nurses, and support staff that is deployed in support of military operations, the capacity to add more patients and continue to see the same number of patients is very unlikely. This is a situation that has occurred frequently in the last few years with Operation Enduring Freedom and Iraqi Freedom.

The General Accounting Office (1999) illustrated that revised financing effects are uncertain and were at issue during two current contract-bidding processes. One bidder, a current TRICARE contractor, wrote DOD to clarify what portion of the funds the MTFs and contractor would each control and how revised financing would affect Resource Sharing. In earlier discussions, the bidder told DOD the company could be creative and assume Resource Sharing

opportunities would or would not still exist. DOD replied that the new approach's effects were uncertain but that the successful bidder should work creatively with the MTFs to achieve some form of resource sharing. DOD also amended the request for a bid proposal to provide more description and examples on how revised financing might be integrated.

While DOD officials in regions with contracts generally favored revised financing, they expressed concerns about poor accounting systems and lack of data on patient care costs and outcomes. The General Accounting Office (1999) showed that some of the MTF commanders had concerns about the general lack of MTF healthcare management experience and control over their staffing. Grazier (1999) shows that these concerns were not unlike their civilian counterparts when managed care was introduced to the public sector. MTF officials in regions that have applied revised financing have stated that they recognize their increased need for accountability, adequate staffing to support their enrollees, and better information systems to support resource sharing decisions. Also, while revised financing reduces reliance on resource sharing, it does not eliminate or necessarily alleviate resource sharing problems and may exacerbate such problems under the new contracts (GAO, 1999).

Transition Management and Change. The implementation of T-NEX and revised financing will represent a significant change in how clinic managers will analyze data within their department and examine trends that could have great influence on their bottom line. It is because of this that managing change must be discussed within the GI clinic to ensure that the managers also know how this change will have an impact on their staff and what barriers it may create.

Hallowell (2003) states sometimes it is necessary to implement change in an organization. Change may be necessary throughout the organization, the department level, or the

individual level. In order to effect organizational change, behavior modification is required. However, Kirby (1998) shows change, which is any modification or alteration of the status quo, may be resisted by those who are affected by it. The clinic leadership's job is to see that the necessary changes are recognized and then implemented. This will require an understanding of organizational behavior and its reaction to change.

According to Ivancevich and Matteson (1999), when change takes place three things happen: there is movement from one set of conditions to another, forces cause the change to come about, and an effect or consequence results. Change is often met with resistance from those it affects, although this not the only response it generates. Johns (1998) states it can also be rejected, tolerated, or accepted. The effect change has on an organization depends on how it is received. Rejection occurs when a change is perceived as being totally unacceptable. An employee who threatens to quit rather than comply with the new policy is probably rejecting change. Resistance takes place when people feel threatened by the change. Sometimes it is overt, as in the case of a work slow down or an outright sabotage of the process. Other times the resistance can be overt as in the case of noncooperation or "forgetting" to implement the change. Of all responses to change, resistance is the most common. Tolerance occurs when workers are neutral about a change. They have equally positive and negative feelings. This reaction is usually associated with implementing a small change or one that has no consequence to the employee. Acceptance occurs when the positive factors favoring the change weigh much more heavily than the negative ones (Johns, 1998).

When management decides that a change should be introduced, attention must be focused not only on the possible employee reactions, but also toward ways of properly introducing and managing the change. In particular, Newstrom (1998) believes clinic leadership should

understand the dimensions of change, the basic steps of the change process, and the role played by time, participation and communication in effecting change.

There are three dimensions of change. First is the logical dimension. It involves asking why this change is needed. Answers may include increased efficiency, lower costs, reduction in staff fatigue, increase in staff morale, or in this case, new government regulation. Then there is the psychological dimension. This dimension involves examining how the change will affect the staff. Do these people feel the change is good for them? Is it in line with their values? Finally, there is the sociological dimension, which refers to the logic of the change in terms of the work group. Is the change consistent with the norms of the group? Will it help to maintain teamwork? Will the physicians be able to live with it? (Newstrom, 1998)

After the three dimensions of change have been adequately considered, attention should be focused on the basic steps of change. There are five in all, and each is vital to maximum effectiveness. First, the leadership must weigh the benefits and costs associated with the change and answer the question, “Is the change really necessary?” This may not be an important step in this study because the leadership does not have a choice whether to implement T-NEX and revised financing or not. They are mandated to do so. Second, the leadership must consider whether this change is the right one. If there are alternative changes, it must be discussed to evaluate if the proposed one is the best. Third, the impact of the change must be evaluated. The short and long -run effect must be evaluated and discussed. Fourth, the leadership must work to secure acceptance of the change. The individuals who will be most affected by the change hold the key to success. Their anxieties and fears will have to be calmed if the organization hopes to effect a successful implementation of T-NEX and revised financing. Fifth and finally, there has to be follow-up and feedback. The clinic leadership must find out how well things are going.

The leadership must determine if the change was accepted, properly implemented and working out as expected. (Sherman, 1999)

Muchinsky (1998) shows that time, participation, and communication can determine the success or failure of the change process. In the case of time, a simple rule of behavior should govern the introduction of the change: the more serious the impact of the change on those involved, the greater the advanced notice that should be given. Never surprise people with change; introduce it in a nonthreatening way.

Participation is important in the change process because, as we know from research, people will be more supportive of changes that they helped bring about than changes that were either assigned to them or forced upon them. Additionally, if some problem occurs with the implementation of a change they have assisted with, the staff will be helpful in discovering how to eliminate or work around the problem. However, if they have no input regarding the change, they will sit on the sidelines and let management figure out how to solve the problem (Muchinsky, 1998).

Research reveals that while many managers feel that they communicate change in advance with their people, in actuality they do not. Likert (1961), for example, has reported that people at the top of many organizations believe they always or nearly always told their subordinates in advance about change, but only 63 percent of the lower-level managers agreed. More surprisingly, perhaps, Likert (1961) also reports that 92 percent of these lower-level managers said that they communicate in advance about change, but only 47 percent of their people agreed with this statement. These issues dealing with change allow the managers to focus on specific areas they can target to ensure any changes that are made due to the implementation

of T-NEX and revised financing are successful and do not cause lowered staff morale or decreased productivity within the clinic and the organization as a whole.

Purpose

The purpose of this study is to develop a strategy to prepare for revised financing at the clinic level. The study will identify areas of concern within the clinic resulting in the loss of Prime patients to the contractor, determine if those losses are appropriate, and recommend possible solutions and better business practices. Additionally, this study hopes to improve clinic manager knowledge and education at NMCS D and to add to the body of knowledge in T-NEX and Revised Financing studies.

Methods and Procedures

The plan for this project is to benchmark a clinic to determine if it is managing its Prime patients and to develop specific areas it needs to concentrate on in order to ensure successful Revised Financing and T-NEX implementation. A benchmark is the best-known value for a specific measure, from any source. All information and data was retrieved from M2 and CHCS.

M2 is the Military Health System (MHS) Management Analysis and Reporting Tool. M2 is a powerful data retrieval tool used to obtain summary and detailed views of population, clinical, and financial data from all MHS regions. M2 includes Military Treatment Facility (MTF) and commercial network claims data integrated with eligibility and enrollment data. This integrated data enhances support to healthcare managers across the MHS. M2 allows users to perform trend analyses, conduct patient and provider profiling studies, and conduct business case analyses to maximize health plan efficiency (Bowman, 2003). The Composite Health Care System (CHCS) provides worldwide automated medical information all MTFs. CHCS data elements include patient registration, admission, disposition, and transfer; inpatient activity

documentation; outpatient administration data; appointment scheduling; laboratory; drug/laboratory test interaction; quality assurance, radiology, clinical dietetic administration; pharmacy; results reporting and order entry; ad hoc reporting; and managed care. CHCS interfaces with over 40 other clinical and administrative systems (CITPO, 2003).

The GI clinic was selected using information about consults to the network such as Prime and Active Duty referrals and direct care authorizations by specialty found on the command patient disengagement report (Appendix B). The clinic was selected due to the clinic's high volume of disengagements to the network.

The GI clinic was analyzed by evaluating the clinic's data through a specific process of review. The method in this study involves a five-step process that includes evaluating resource analysis and productivity, referral tracking, provider profiling, appointment utilization / template management, and costs.

The first step was to evaluate clinic resource allocation and productivity by interviews with medical staff and analyses of data. Clinic productivity can be difficult to evaluate because NMCS D relies solely on each clinic to determine their own capacity. This can lead to subjectivity and potential data corruption. Through the utilization of Relative Value Units (RVU) and nationally recognized benchmarks, NMCS D will have the ability to fully evaluate the clinic's productivity and true staffing and resource requirements. Relative Value Units are a unit of measure designed to permit comparison of the amounts of resources required to perform various provider services by assigning weight to such factors as personnel time, level of skill, stress level, and sophistication of equipment required to render service. Benchmarks are useful because they give the best known value for a specific measure from any source.

The next step in the process was to evaluate the clinic's referral-tracking process. This is a crucial step in the transition to T-NEX and Revised Financing because it shows if there is a "leak" in the system that is allowing too many Prime patients to be disengaged to the MCSC. A "leak" occurs when the MTF consistently permits a large volume of Prime Patients, who should receive care at the MTF, to be referred to the MCSC for care. However, sometimes it makes more sense to allow some procedures or diagnoses to be referred to the network rather than provide the care in-house. A decision of whether it is more financially advantageous for the GI clinic to recapture patients from the network must be made. This is done through the make / buy decision-making process. The clinic should try to recapture all procedures or conditions that are cheaper to perform in-house and look to refer the procedures that are more expensive in-house to the network.

Provider profiling was then conducted using CHCS. Provider profiling epitomizes the evolving relationship between health care administration and providers. Provider profiling involves a comparison of the practice patterns of providers, either as individuals or as part of a group, with some norm derived from the practice of comparable providers or an empirically established guideline. Rather than focus on the appropriateness of specific clinical decisions for individual patients, provider profiling is a means to assess the pattern of provider performance over an extended period of time and across multiple patients.

The relevant considerations for provider profiling include noting that the unit of observation is the patient while the unit of analysis is the provider. Additionally, provider profiling must include some measure of resource use such as charges, visits, or major service events on which to base profiles. These measures may include various charges such as ambulatory, inpatient, or total charges.

The data was to be viewed in a monthly snapshot format. However, a change to the clinic referral process made this step obsolete. The point was to see if there are some providers who are referring more patients to the MCSC than others and analyze why these providers have higher referral trends than other providers. However, since the disengagement of the patient is now done by the GI clinic director, this data was no longer available and not very beneficial to the clinic staff. I also evaluated trends of primary care consult to the clinic. Analysis of primary care referral trends can open up additional appointment space to the clinic, and can increase the clinics' access for their patients.

Further, analysis of clinic appointment utilization, the current appointment system, and template management was conducted. Using CHCS, the clinic appointment system was evaluated by determining available appointments. This analysis allows the clinic to determine if they have enough appointments to meet demand for their services. This can show if they are being efficient with their time and if the appointing process they employ is effective. This also allows them to benchmark against other clinics in the hospital and seek best business practices.

There is tremendous variation in how clinics at NMCS D prepare their templates. Templates are the daily schedules of appointments and procedures assigned to each provider within the clinic. Most clinics establish their templates in CHCS. However, many clinics still make all appointments in a logbook, written by hand. Using a logbook allows the clinic to keep their schedules away from public view and allows their providers and staff to manipulate their schedules, leading to decreased productivity. This makes it much more difficult for the command leadership to evaluate a clinic's productivity. It also can make it more difficult for a clinic to collect data and limits their ability to analyze data for areas to improve.

In the system, the clinic manager must evaluate their templates at least every few days to ensure that they have enough available appointments. But under T-NEX and revised financing, the clinic manager must look at and make changes to the templates at least daily, if not hourly. Template analysis is an integral part of preparing for T-NEX. Templates must be evaluated and changes to the case mix must be made to ensure the clinic can meet their current demand and alleviate patients unnecessarily going to the network.

Finally, cost must be evaluated. M2 was the source for all costs, as well as all visit and procedure data related to network referrals. Through analysis of M2 data, the top ten diagnoses and procedures by volume and total costs were obtained. This data allows the clinic leadership to evaluate which procedures or diagnoses that can be targeted to attempt to recapture patient care to the facility and save the most money on a per case basis. It is important to consider that the procedure or diagnosis with the most volume or cost may not be the cases most advantageous for recapture. That decision should be based on the cost per procedure. If a condition is low in volume but high in costs, it may be more desirable to recapture these few cases than a procedure that is both high in cost and volume because the average cost per visit may be considerably less. Evaluation of these diagnoses and procedures is greatly desired by the GI clinic.

Ethical Considerations

The use of NMCS D patient data in this study presented an ethical consideration. Protection of patient information and privacy is critical and required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). NMCS D data was provided without names or any identifiable data sets. Each patient was given a numerical code to shield his or her identity.

Reliability and Validity

“Validity is the extent to which a test measures what we actually wish it to measure.” (Cooper & Schindler, 2001, p 210). In order to ensure validity in this study, data was obtained from the Medical Expense and Performance Reporting System (MEPRS), CHCS, and M2. MEPRS is a cost management system that accumulates and reports expenses, manpower, and workload performed by Department of Defense fixed military medical and dental treatment facilities. It is the basis for establishing a uniform reporting methodology that provides consistent financial and operating performance data to managers who are responsible for healthcare delivery (GPRMC, 2002). It is the consistent performance of MEPRS that ensures its reliability. “A measure is reliable to the degree that it supplies consistent results.” (Cooper & Schindler, 2001, p. 215).

All data obtained from within the MHS is assumed to be reliable and valid in the aggregate. The MHS has instituted an aggressive data-quality (DQ) program in recent years; the program entails each MTF having a DQ manager and DQ committee to audit and trouble-shoot any DQ problems (MHS Data Quality Management Control Review List, 2004). In addition, each MTF commander is required to sign a monthly “Data Quality Statement” attesting to the timeliness of data submissions, completion of required audits, and compliance with applicable JCAHO and TMA policies (MHS Data Quality Management Control Programs, 2004).

Programs and systems reviewed each month include the Medical Expense and Performance Reporting System, the Expense Assignment System, the Composite Health Care System, and the Worldwide Workload Report. TRICARE and DEERS data is audited periodically by the Government Accounting Office, the DoD Inspector General, and other agencies for reporting to Congress, TMA, and other federal agencies. As with the MTF-level

data, while there may be occasional problems with individual records, the aggregate data is generally accepted to be reliable and valid, and is suitable for use in this research project

Results

Resource Allocation and Clinic Productivity

Using the NMCS D Resource Allocation and Productivity Tool, an analysis was conducted of the GI clinic staff to include staff providers, fellows, nurses and support staff. When conducting this analysis, some assumptions were made. It was assumed that staff providers work 50 hours per week. It was also assumed they would be available 220 days per year for patient care. Therefore, this analysis was based on outpatient activity only. Inpatient data was not taken into account.

Although there is an inpatient component in which staff providers and fellows must participate, this component was not included in the analysis. While fellows do see patients, their workload is credited to the staff provider. The productivity component is therefore primarily based on the staff providers.

MGMA standards for gastroenterology were used for this study. The MGMA standard (75th percentile) for gastroenterology is 12 outpatient encounters per day. Tables 1 and 2(pgs. 66 - 67) illustrate the assumptions made for TAD, leave, holidays, physical training and salaries. Standards for TAD, leave, holidays and physical training were according to Navy regulations. Salaries were obtained from the Defense Financing and Accounting Service (DFAS), according to 2004 active duty military and civil service employee pay scales.

Table 3. Expected Encounter (Unit) Production

DUTY TYPE	Expected unit production per hour	Expected unit production per 8 hours	Expected Production per 4 hours	1 FTE Defined (hrs/yr)
Staff Provider	1.33	10.64	5.32	2,090
Fellow	0.00	0	0.00	1,760
Nurse	0.00	0	0.00	1,760
Support Staff	0.00	0	0.00	1,760

Table 3 illustrates the definition of 1 Full Time Equivalent (FTE) for staff providers, fellows, nurses and support staff. FTEs are defined as 2,090 hours per year for staff providers and 1,760 hours per year for all other support teams. This figure was established by the NMCSO productivity and resource analysis team and is used as the standard for all productivity calculations involving providers at NMCSO.

Expected unit production per hour must be obtained to show productivity for the clinic. The expected unit production per hour was obtained by dividing units per year (MGMA standard of twelve encounters per day X the total number of days available per year), by the hours per year (hours per day X the total number of days available per year). Once the expected unit production per hour is obtained, it is then extended to four and eight hour production totals. There are no figures given for all other types of GI clinic staff because they do not have bookable hours in clinic and are mainly used for support of the staff providers.

Figure 1 illustrates the total time distribution, in hours, for the GI clinic staff providers. It is important to note that 15% percent of their time is spent on Graduate Medical Education (GME) training for 6 fellows. Forty-one percent of their time is spent seeing patients in a year, with 26 % spent on administrative tasks.

All other staff members were analyzed for time distribution. The focus was on the staff providers because they have the responsibility for providing patient care and overseeing the care that the fellows provide. This graph illustrates a need to increase the percentage spent on bookable hours and less time on administrative tasking, e.g., the administrative hours required for the staff provider could be decreased by two percent, an extra hour and thirty minutes to the

provider's schedule could be added. This would allow the provider to add one extra procedure and a follow-up appointment per provider, and allow the clinic to surpass the MGMA standard of 12 encounters per day.

Figure 1. Total Time Distribution for GI Clinic Staff Provider.

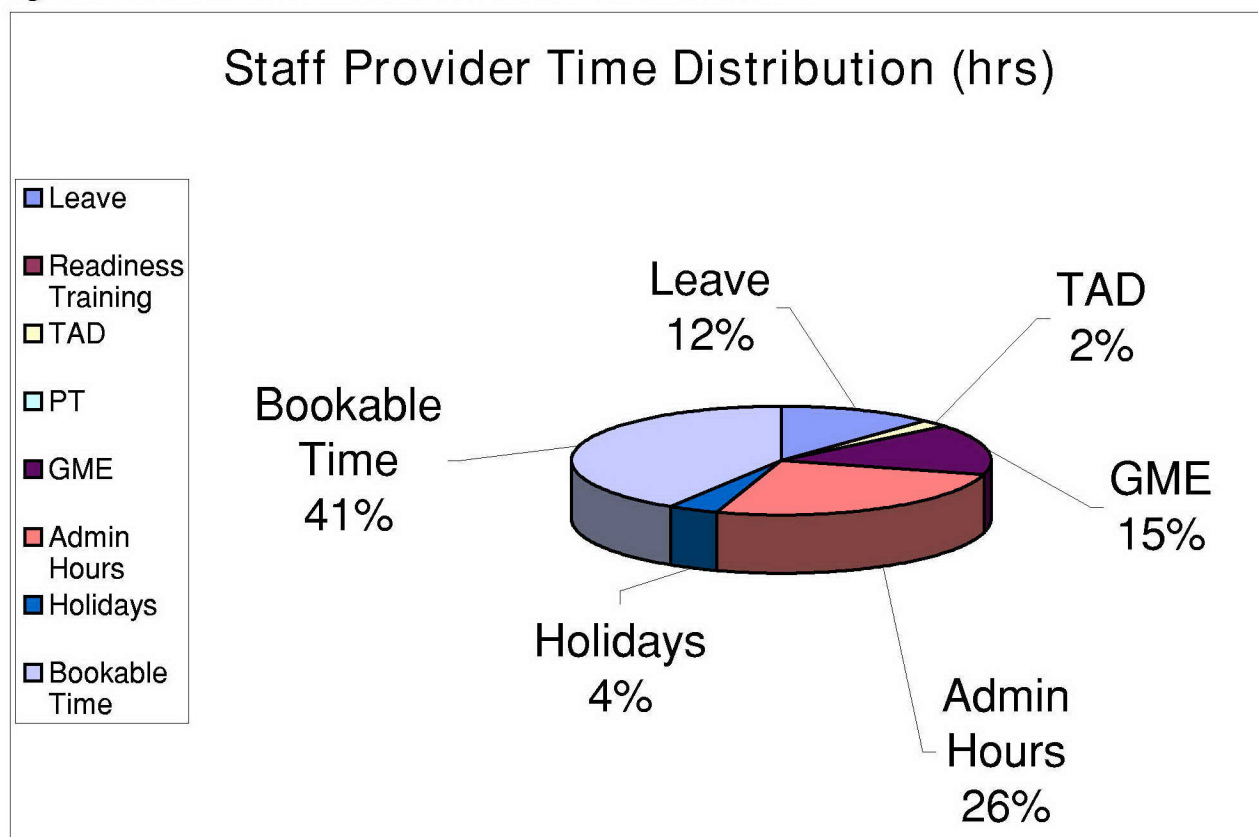


Figure 2. Total Labor Cost by Staff Type.

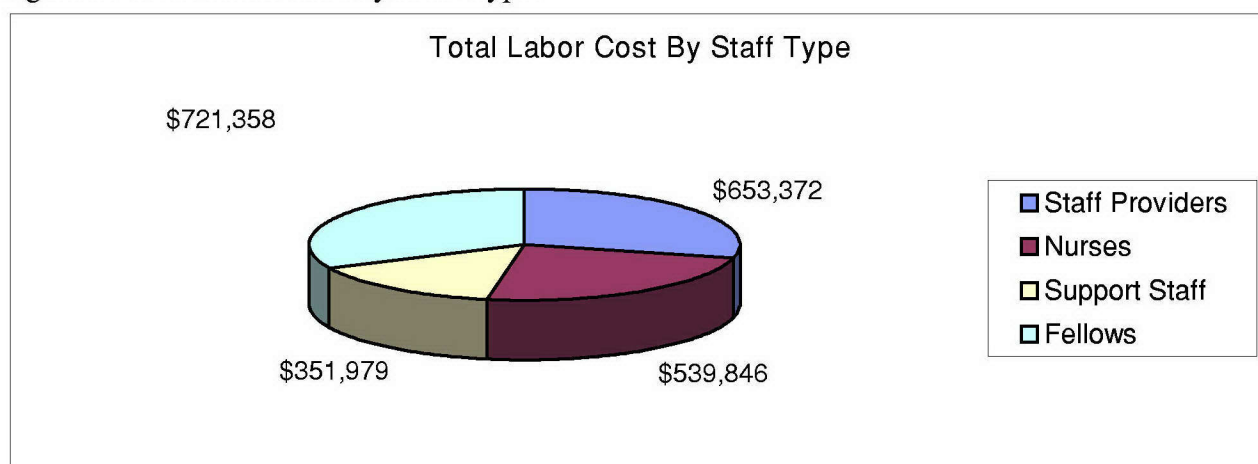


Figure 2 illustrates the total labor costs for all GI clinic staff personnel. Note that fellows account for 31% of total labor costs, followed by staff providers (29%), nurses (24%), and support staff (16%). The labor costs figures can be deceiving since there are only four staff providers and six fellows. The costs between the staff providers and fellows are very close in total costs. The reason for this is that the four staff providers are all Navy Captains (O-6) as compared to the fellows, whose ranks are from LCDR (O-4) to lieutenant (O-3). The total labor costs for the GI clinic is \$2,266,555.

Productivity was examined to evaluate what the productivity target, maximum appointment capacity, productivity per FTE, and salary cost per value unit currently are for the GI clinic. The productivity target was 4,200 appointments per year. The maximum appointment capacity is 4,454 appointments. There were a total of 3,426 productive hours for the staff providers. The total productivity per FTE was 2,779.70 appointments per year. The salary cost per value unit was \$497.42. This analysis can have a large impact on the clinic because it shows how productive the providers are.

The new standard established by NMCS D is that the providers must have 35 bookable hours per week, or seven hours per day to see patients. The clinic is currently only at six bookable hours per day. There are, however, some limitations to their schedule that have made it more difficult to see more patients. The addition of GME training for the fellows has greatly decreased clinic productivity. The inpatient component and the time associated with seeing inpatients and making required rounds must be considered. This does take time away from their ability to book more outpatient visits. The differences between the current situation and the pending change in requirements should be further analyzed. This will allow clinic management to see what the differences are in the outcomes when increasing one extra hour per provider per day for outpatient visits.

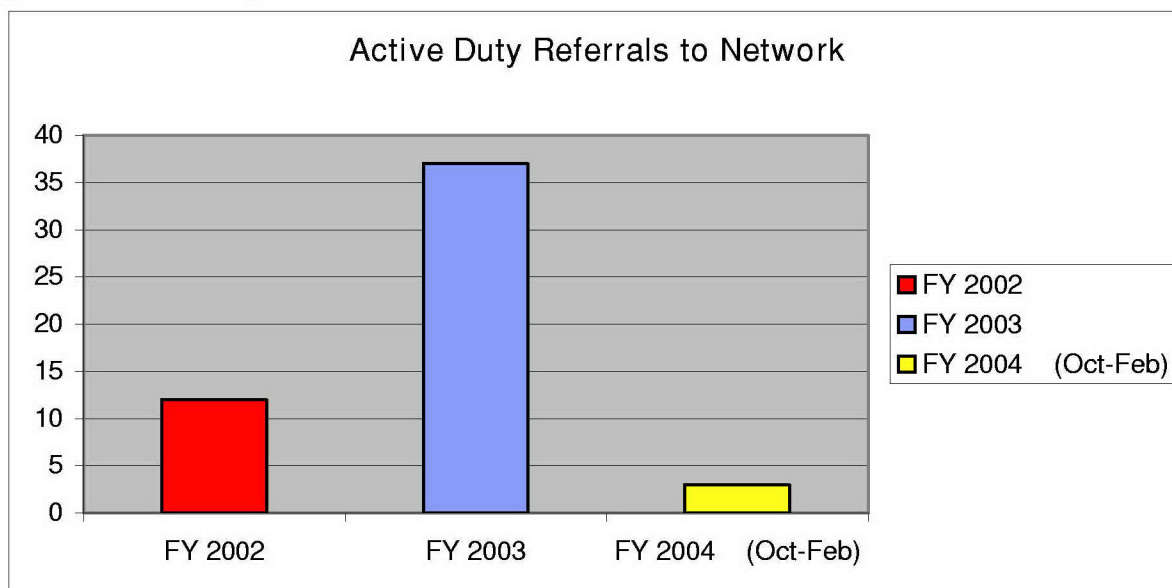
Referral / Referral Variation

The referral process at the GI clinic was analyzed to ensure that the system was working as efficiently as possible, ensuring the proper patients were being seen at the clinic and that referrals

to the network occurred only when absolutely necessary. Appendix C illustrates the current process. Once the consults are received from the primary care clinic, they are reviewed by the clinic director. The clinic director, based on open appointments and case complexity, decides in which clinic the patient will be seen or if the patient will be referred to the network.

If the consult is deemed unnecessary or not needed by the GI clinic, the consult is either forwarded to the appropriate clinic or is sent back to the primary care clinic for re-evaluation. The clinic director makes all decisions pertaining to which patients will be seen within the clinic. The effectiveness of this process is based on the assumption that the director has the necessary education and experience to assess and triage the cases and still maintains the integrity of the GME program. Once the patient is sent to the network, the GI clinic does not track the patient. This can create a problem since there is no system in place to ensure that the patient has received an appointment and that they are receiving the proper care. It would be difficult and inefficient for the clinic to reassign a support staff member to track the patients. This is a problem for many clinics, not just the GI clinic.

Figure 3. Active Duty Network Referrals



Active Duty members are the backbone of the military and are the top priority for medical staff. Active Duty members are almost always seen within the military treatment facilities.

However, due to lack of available appointments or more complex cases, some of these beneficiaries must be referred to the network. The clinic attempts to recapture as many active duty cases from the network as possible.

Figure 3 illustrates the number of Active Duty referrals to the network from FY 2002 to February 2004. As noted on the figure, there was a large increase in active duty referrals in fiscal year 2003 (37) compared with Fiscal Year 2002 (12). This increase can be attributed to the increase in volume of patients to the GI clinic and the complexity of some of the cases of active duty members. If the case is too complex or out of the expertise of the clinic staff, then the active duty member is sent to a specialist in the network. One example of care referred to the network is liver transplants. If an active duty member requires a liver transplant, they are automatically sent to the network because the NMCS D clinic staff does not have the expertise or skill to follow these complex cases.

In order to prepare for T-NEX, the GI clinic must be able to recapture a majority of these active duty cases. Also note in Figure 3, that the clinic has made great strides in the first six months of Fiscal Year 2004, with only three active duty members being referred. Since evaluating this data, the clinic leadership has become diligent in ensuring that only the most extreme cases for active duty members are referred to the network.

Figure 4. Prime Network Referrals

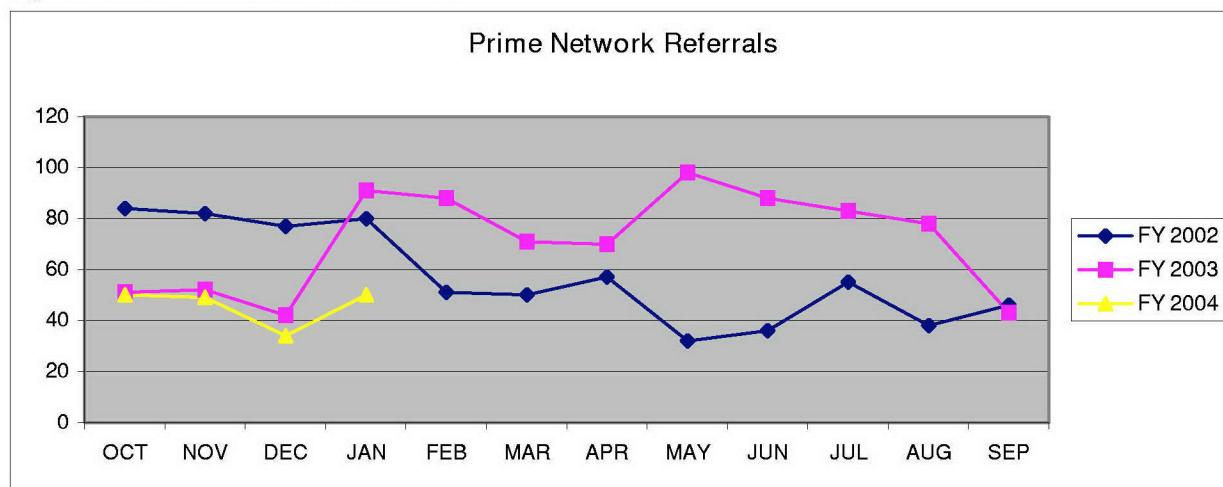


Figure 4 shows the total network Prime referrals from fiscal year 2002 to 2004. The number of referrals to the network have begun to decrease as the clinic continues to look for ways to add more patients to the schedule or return inappropriate consults. There appears to be a large increase in consults in Fiscal Year 2003. This increase can be explained by a change in examination requirements. The new requirement is that any patient over the age of fifty (or at forty years old, if there is a family history of cancer) must have a colonoscopy. This requirement has put a huge burden on the staff and increased the number of referrals to the network. With only four staff physicians and six fellows, there are not enough bookable hours to accommodate the additional procedures in the schedule. This is one area that will be discussed later in the template portion of the study. Though it appears that the volume of referrals has been reduced in Fiscal Year 2004, the clinic continues to be one of the highest network referring specialty clinics in the hospital.

Referral Variation

Another aspect of analysis is the evaluation of what demographic variables are predictors of the clinic referring a patient to the network and if there is variation between patients seen in house and out in the network. Variation exists. Yet, the medical standard of care is for physicians to accurately diagnose and treat illness and disease even though patients are different. Variation in the practice of medicine could indicate differences in cost, access, and quality.

Variation analysis is a powerful tool to help determine if variation is outside the boundaries of the norm and may indicate a problem. This type of analysis has existed since the early 1800s when Sir James Y. Simpson analyzed mortality rates in rural and urban England (Neuhauser, 1993).

Sample and Data. The NMCS D Directorate for Healthcare Operations (DHOP) supplied the data from the M2 Data Repository. Military facilities data (n = 9,133 patients) are from Standard Ambulatory Data Record (SADR) from the Composite Health Care System used at NMCS D. Network (civilian) facilities data (n = 1,045) are from Health Care Service Records gathered by the TRICARE service contractor. The two data files were combined to form one

dataset (n = 10,178) comprising all care received at the GI clinic for Fiscal Year 2003.

All occurrences of the dependant variable (referral) were binary coded: 1 for in-house care, and 0 for referral to the network. All independent variables required recoding. The raw age of the patient was recoded into eleven categories. Age's ordinal categories included: 10 and under, 11-20, 21-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51-55, 56-60, and 61 or older.

The gender of the patient was recoded to binary data: 1 for male, and 0 for female. The beneficiary category was also recoded. The categories were: 1) Active Duty Dependent; 2) Retired; 3) Retired / Deceased Dependant and all other patients; and 4) Active Duty service members.

Investigative Methods. The research hypothesis was that variation exists in the GI clinic for referral rates. The goal was to determine if variation exists and to pinpoint where the variation occurred.

Frequency distributions revealed categories within some variables that contained low counts. This information was later used to recode and combine categories to allow the model to converge. Recoding was limited and facilitated logical grouping of categories. For example, beneficiary category was originally coded with five categories: Active Duty Dependent, Retired, Retired / Deceased Dependent, Active Duty, and all other patients. All other patients only accounted for 565 occurrences in over 10,178. The low count was causing the validity of model fit to be uncertain. To correct this, all other patients were combined with retired / deceased dependents to account for 27 percent of the sample.

Cross tabulations were conducted for each predictor on the criterion. Multi-way tables were generated, which yielded counts and within category percentages for each predictor on the dependent variable. Descriptive statistics were gathered from these tables and are displayed in Tables 4 and 5 (Pgs 68-69).

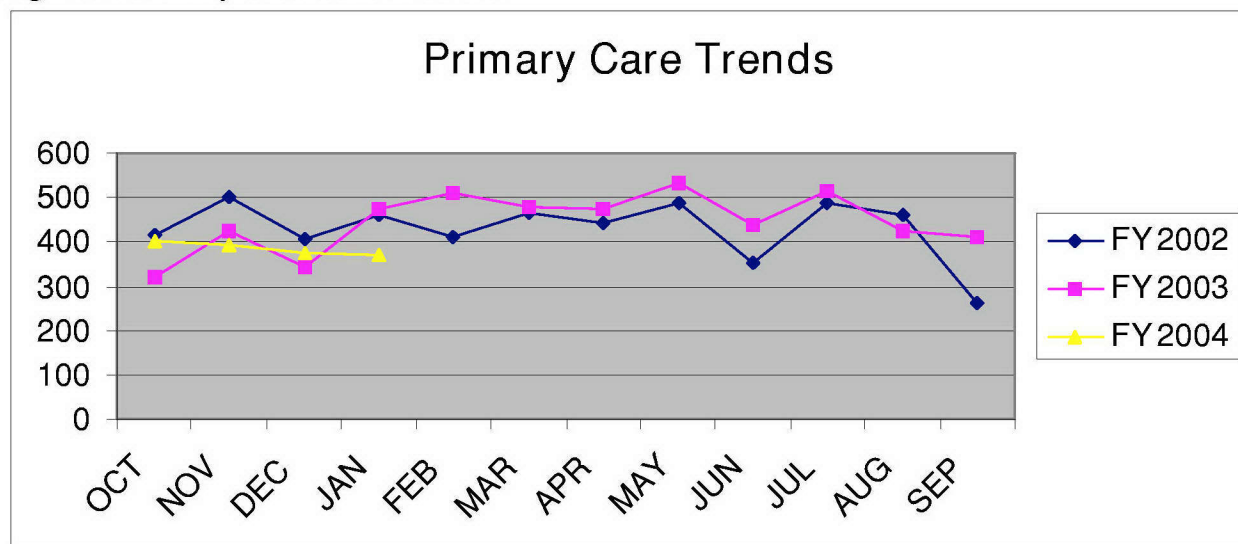
Since the dependent variable of referral was recorded as a dichotomous variable, a binary logistic regression was conducted to synthesize the predictive model. The binary logistic regression used the block entry method. Reference categories were chosen for each covariate.

The last category for each variable was used as the reference by default.

Provider Profiles

Another important component for the GI clinic to consider is the trends for consults coming from primary care. Figure 5 illustrates the total number of consults sent from primary care to the GI clinic from fiscal year 2002 to 2004. Primary care includes internal medicine. There appears to be a large increase in fiscal year 2003. This is due to the added requirements for a colonoscopy as previously discussed. In the first quarter of Fiscal Year 2004, there appears to be a decrease in the amount of consults from primary care. This is attributed to a change in how the GI clinic deals with inappropriate consults.

Figure 5. Primary Care Consult Trends



When there is a consult that is forwarded to the GI clinic that is inappropriate, the clinic refers the consult back to the physician and offers training on exams, procedures, or lab tests that can be conducted at the primary care level to ensure that the patient received the proper level of care. Providing education and training to the primary care staff allows the clinic to see fewer consults, and to increase capacity in day-to-day operations. These changes have begun to decrease the volume of unnecessary consults and allow the GI clinic to add patients to their schedules that truly need to be seen by a GI specialty physician.

Appointment Utilization and Template Management

Table 6. Appointment Utilization

Appointment Utilization GI Clinic (Fiscal Year 2003 and 2004)							
	Booked Appts	Frozen	Open	Wait	Total	Avail Appts	% Unbooked
EST	1868	0	813	0	813	2681	30.4
PROC	4811	0	374	0	374	5185	7.2
SPEC	2080	0	68	0	68	2148	3.2

Table 6 shows the appointment utilization for the GI clinic for Fiscal Years 2003 and 2004. This data was obtained from the Appointment Utilization Report (AUR) within CHCS. There are three appointment types that the GI clinic utilizes: Established (EST), Procedure (PROC), and Specialty (SPEC). The established appointments are used for follow-up patients. The procedure appointments are used for various procedures that the clinic staff performs. The specialty appointments are used for new patients. All GI providers are assigned a small number of new patients every week.

As noted in the above table, there were a large number of established appointments that were unfilled within the last two years. In fact, over the last two fiscal years, over 30% of these types of appointments went unfilled according to CHCS. This is an extremely large percentage when compared with the specialty appointments, where only 3.2 % went unfilled over the last two years. These numbers can be a little deceiving because they do not account for walk-ins. Often, the GI clinic staff will fill these open slots with walk-ins. In fact, when analysis was conducted of the total monthly appointments available, it showed that there were far less appointments available than were being displayed in CHCS.

Table 7 (Page 70) illustrates that when walk-ins are accounted for, a limited number of appointments were available. Interviews with the clinic staff showed that they believe that every appointment slot is filled, but this is not possible when no-shows are accounted for in the total appointments available. Though the clinic's no show rates are very low, they still have an impact on the utilization of appointments because it is nearly impossible to fill those slots in the

schedule due to time constraints.

Table 7 (Page 70) also illustrates that there appear to be more appointments available during the summer months. This can be accounted for by the higher number of patient cancellations that occur during this time. The clinic manager must be aware of this issue and be ready to fill these open slots in the template as quickly as possible.

Costs Associated with Referrals

Analysis of diagnoses and procedures was conducted by volume and unit and total cost. While each of the following areas is separated by volume or cost, it is important to note that full cost must be considered together to fully evaluate which procedures or diagnoses could be good candidates for possible recapture from the network.

Top CPT Codes. Current Procedural Terminology (CPT) Codes are a list of terms and codes that provide a uniform language for reporting medical services and procedures. They are used in reporting to health insurance programs for claims processing, developing medical care review guidelines, and in medical education and research. CPT codes were evaluated for volume and costs.

Figure 6. Top Ten CPT Codes by Volume

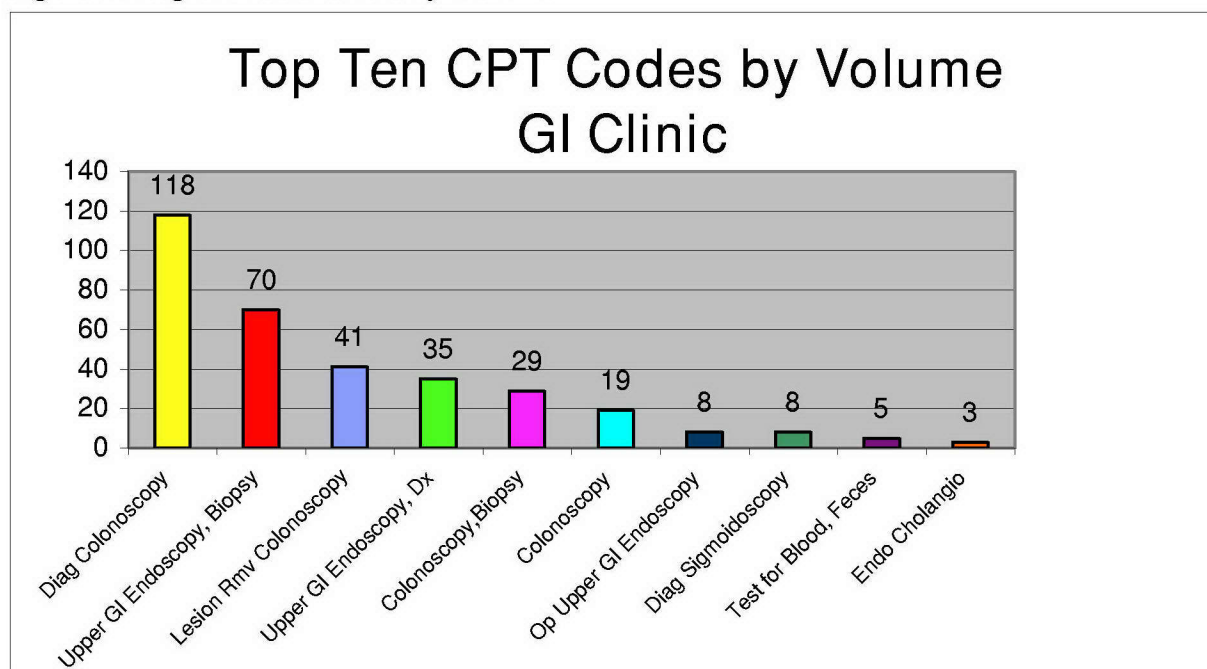


Figure 6 shows that the top procedure performed on patients referred to network was a diagnostic colonoscopy. Over 118 of these procedures were performed in fiscal year 2003 followed by 70 upper GI endoscopies with biopsies. Providers cognizant of these referral patterns might be able to bring some of these patients back into the clinic to perform in-house.

However, this is only one piece of the puzzle. While volume is good to know, to make the analysis effective, costs must be considered. The two pieces together should paint a better picture of what types of procedures are being performed and what the unit costs are. This is important because the procedure with the highest volume may not have the highest total costs to the hospital.

It is important to note that only the top ten procedures in volume were evaluated; in this analysis there were over 30 procedures present in the data. These procedures drive most of the clinic costs.

Figure 7. Top Ten CPT Codes by Total Cost

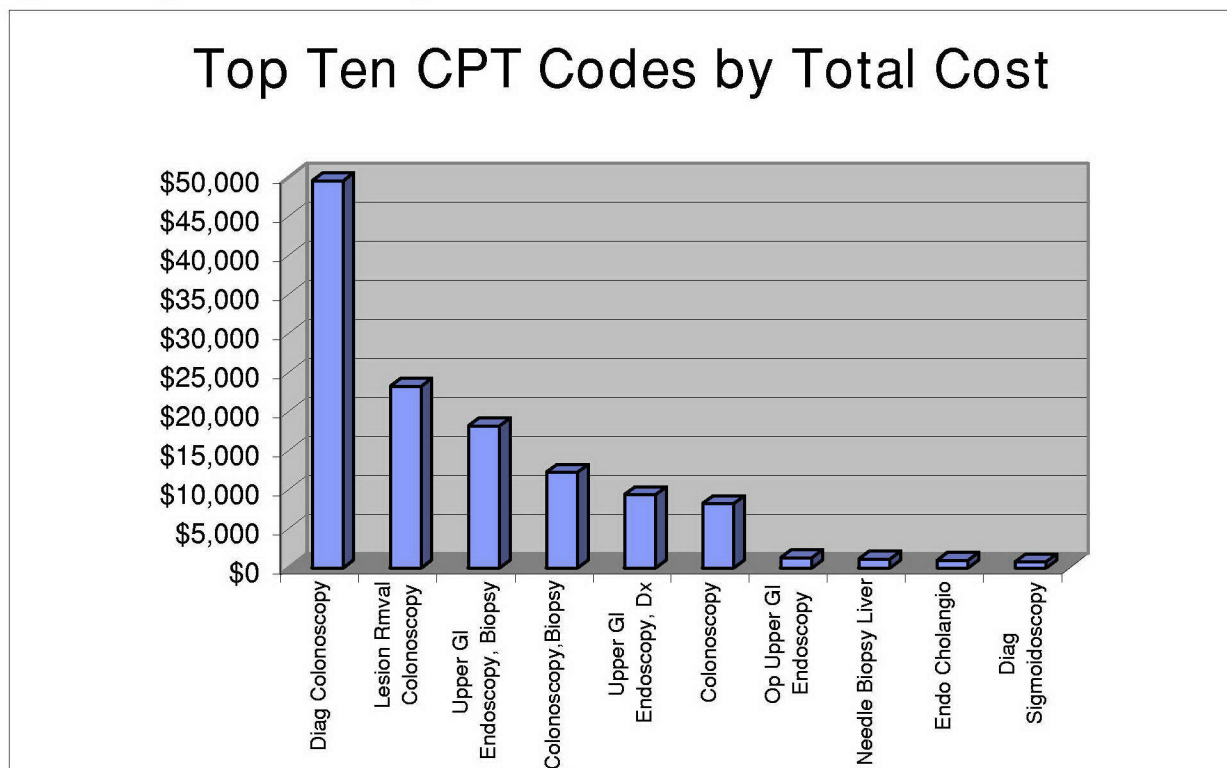
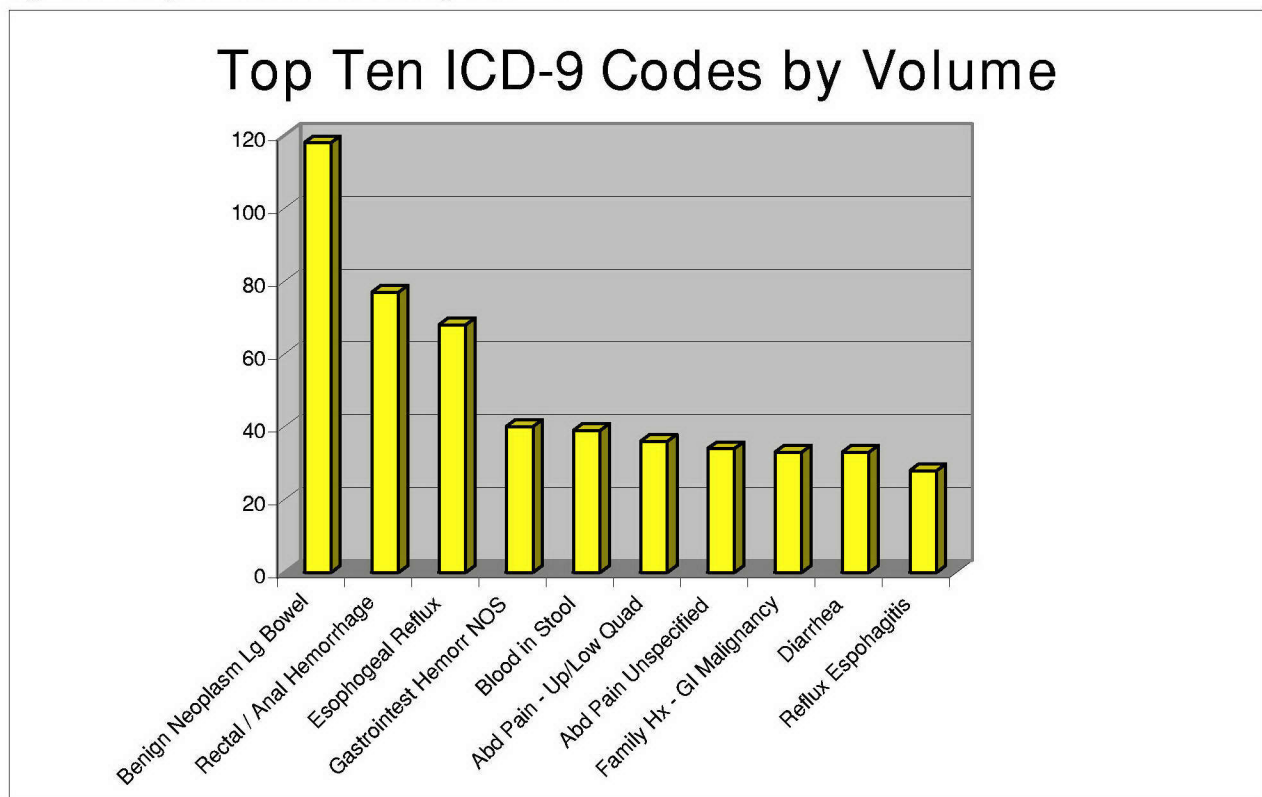


Figure 7 shows that the diagnostic colonoscopy is also the most expensive procedure. Lesion removal and colonoscopy is the second highest in total cost. This could be intriguing because while it is second highest in cost, it is third highest in volume. This could be a procedure that the clinic may wish to evaluate because of the higher cost per procedure. It is important to note that just because the procedure is high in cost or volume does not necessarily mean that the clinic should recapture these procedures.

Top ICD-9 Codes. International Classification of Diseases, 9th Revision (ICD-9) codes are a statistical classification system that arranges diseases and injuries into groups according to established criteria. Most ICD-9 codes are numeric and consist of three, four, or five numbers and a description. Not only must the GI Clinic be aware of the procedures most conducted and costs in the network, it is also important to know the diagnosis and conditions that are most often referred to the network. Just as with the CPT codes, the volume is just one component. The overall costs should also be considered.

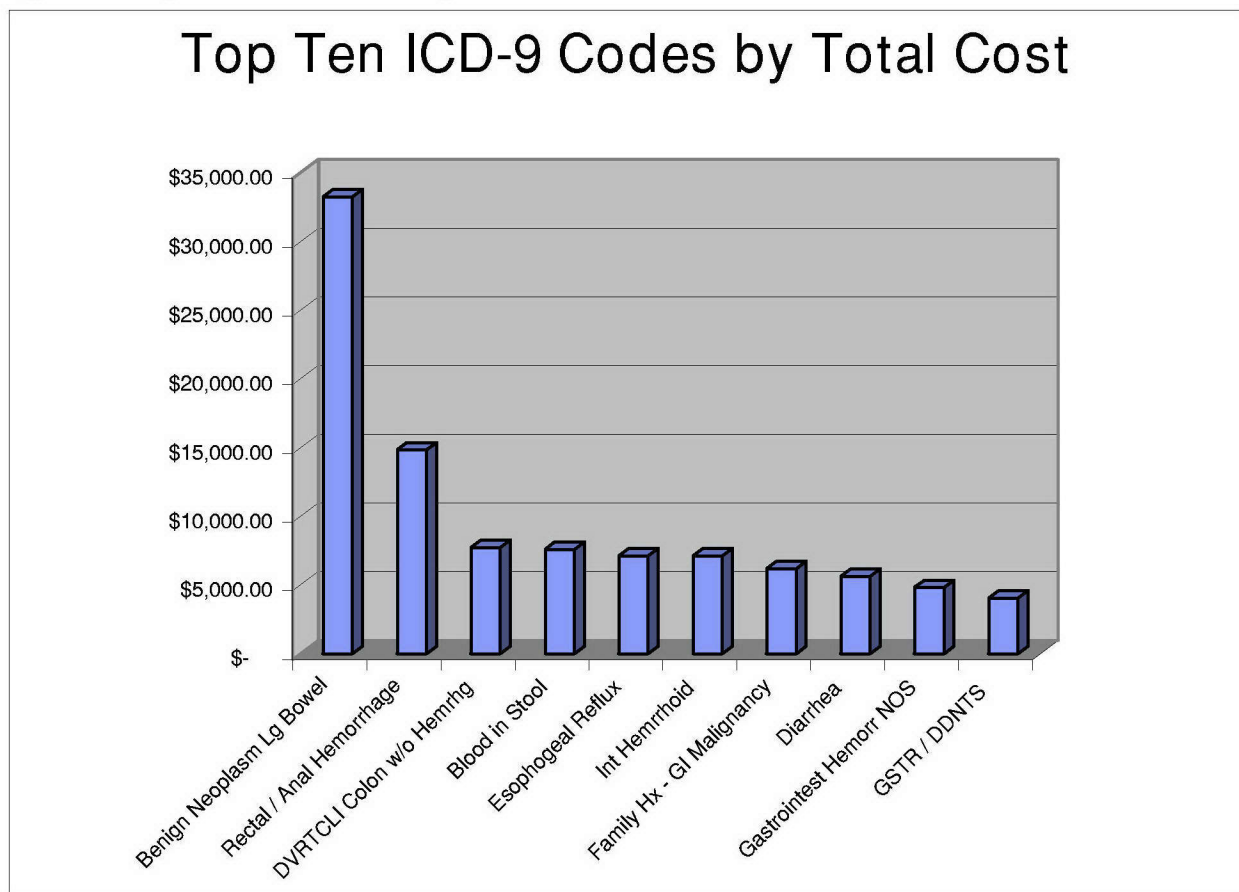
Figure 8. Top Ten ICD-9 Codes by Volume



According to Figure 8, the most common diagnosis that is sent into the network is a benign neoplasm of the large bowel. This condition was seen 118 times in the network in Fiscal Year 2003. The second largest number of visits was for rectal / anal hemorrhage, seen in the network 77 times. This is an area that the GI clinic should explore to see if there is a way to limit these types of conditions going to the network providers. These findings are in line with other data queries made by the managed care staff.

It should be noted that volume is not the best indicator when attempting to recapture some of the diagnoses from the network. Costs are very important as well. If diagnoses and treatment is beyond the scope of care for the staff providers, then the GI clinic may not be able to recapture some of these patients. This does not appear to be the case in most of these diagnoses.

Figure 9. Top Ten ICD-9 Codes by Total Cost



Not only is benign neoplasm of the large bowel the highest in volume but also in unit cost. The second most expensive diagnosis was rectal / anal hemorrhage. The third most was DVRTCLI Colon without hemorrhage. This condition may need more analysis since it was the third highest in terms of unit cost but was not even listed due to volume. It might be more cost effective to keep this type of diagnosis in house, saving money going to the network.

Discussion

The GI clinic was analyzed according to a five-step process that included clinic resource analysis and productivity, referral tracking, provider profiling, appointment utilization and template management, and costs associated with referrals.

Resource analysis and productivity

Based on the data collected and the analysis conducted of the GI clinic's allocation of resources and productivity, it appears that they can and need to increase their workload. It was noted that the total productive FTE's was 1.64. Based on the available bookable hours, there is potential to increase their templates to accommodate more patients. The NMCSO leadership will soon implement a requirement that changes the total number of required bookable hours to seven hours per day. The clinic is currently at six hours a day. They are currently 103 appointments deficient in meeting demand for their population. That would explain why they continue to refer more patients to the network than many clinics within the facility. Every effort must be made to increase bookable hours to attempt to lower this deficiency in available appointments.

The GME requirements placed on the staff providers appear to hinder their ability to see more patients and increase productivity because of the teaching time required of them on a daily basis. They are required to be in on all procedures that the fellows perform because they are not as experienced as the staff providers.

They are also below the MGMA standard of 12 encounters per eight hours. They are currently at 10.64. There is a need to increase this number to just get to the 75th percentile for the standards. Their expected unit production could be increased to the MGMA standard by seeing 2 more patients per hour per provider. Although, the staff providers do have inpatient

requirements, this is still possible. Another factor that can affect the encounters is the complexity of the patient. This must be documented properly to ensure that the providers are getting full credit for the types of conditions and issues that they are seeing with each patient.

Labor costs exceed \$2 million for the GI clinic. A majority of the costs are associated with provider labor. The greatest labor cost can be attributed to the military staff providers. As previously mentioned, the four staff providers are all Navy Captains (O-6). The yearly salary per staff provider is \$163,343. The nurse and support labor costs are actually attractive based on the nursing staff being primarily new or junior nurses and hospital corpsmen.

When changes were made to the template to account for seven hours of bookable time for staff providers, there is still a 112 appointment deficit in capacity for the GI clinic. The clinic will be able to see approximately 300 more patients per year, which would allow them to recapture a great number of patients from the network and begin to disengage less. The productive FTE's increased to 1.88 and the salary cost per value unit also increased to \$458.11. This represents a savings of \$39.31 per value unit.

Referrals

Referral Tracking. The referral process that is now in effect within the GI clinic is much more effective. Sending all consults through the department head has allowed for a much smoother and quicker referral process. Also, all referrals made by GI clinic staff are sent to the GI clinic director so he can refer the patient to the network. Under the old referral process, the referring GI provider was required to complete a "Referral to Network Civilian Care" form that had to be routed through the department as well as the Directorate for Healthcare Operations. This could take up to 3 days.

Under the new process, if the GI clinic provider believes the patient should be disengaged to the network, they put in a consult back to the GI clinic where the clinical director will disengage the patient directly. This allows the clinic to better evaluate patients for true need of network care and also decreases time for the patient to wait for an appointment. This new referral system has been an improvement for both staff and patients, and increases customer

satisfaction.

Active Duty Referrals. The key to recapturing Prime patients back into the clinic starts with Active duty members. Fiscal Year 2003 saw an increase in the number of active duty members being referred to the network. Further analysis of this issue showed that the GI clinic had a large number of staff that was deployed to Iraq and Afghanistan during 2003. This could have had an impact on why this number is considerably larger than 2002. However, the clinic management is very aware of this trend and has continued to add space to their schedules for the active duty GI clinic. This has allowed the clinic to reduce the number of active duty members referred to the network to three for fiscal year 2004. This is a positive step for the clinic as they prepare for revised financing and T-NEX. This reduction in Prime patients into the network will save the command a considerable amount of money in the future. If they continue to focus on the active duty population, they should be better prepared for changes to come.

Prime Network Referrals. In order for the GI clinic to recapture Prime patients from the network, they must attempt to limit the number of Prime patients that are sent into the network. Prime network referrals saw a significant increase during fiscal year 2003. However, with changes to the referral process and the clinic's diligence to keep as many Prime patients within the clinic as possible, they have begun to see the number of Prime patients referred to the network decrease in fiscal year 2004. Another factor that has contributed to this decrease is the education and training that the GI providers are able to give to other specialty and primary care providers for care that can be provided in their clinic as opposed to referring the patient to the GI clinic. This also allows for fewer patients to be referred to the GI clinic, thus more availability to MTF services.

Referral Variation. Descriptive statistics are arrayed in Table 1 (pg 67). The table shows the number and percentage of patients seen in-house, referred to the network, and totals for each covariate category. Inferential statistics are displayed in Table 2 (pg 68). The Wald chi-square statistic (χ^2) was used to assess significance. Odds ratios indicate the proportional increase or decrease compared to the reference category.

The variable age has no significant effect on a patient being referred to the network. The percentage for a 1-10 year old to be referred to the network is 10% compared to a patient that is 61 years or older at 10.3%. All ages within the variable had percentages from 9.9 to 10.5%. The Wald chi square for age as a whole ($\chi^2 = 2.612$, 10, $p < .989$) and for each category is not significant. The odds of referral also do not show steady increase as age increases. The lowest odds are 31-35 year olds (.916) and the highest is 26-30 year olds (1.194).

The variable gender shows little difference in percentages from one category to the next. In fact, the spread is only .4%. The odds of being referred are significantly higher for a female than a male and is at a statistically significant level ($\chi^2 = 1576.617$, 1, $p < .001$). This expected outcome indicates there is a difference between male and females being referred to the network.

Beneficiary category has an impact on being disengaged to the network. The percentage of active duty being referred to the network is 1.3% compared to almost 17% for retired / deceased dependents and all other patients. The Wald chi square for beneficiary category as a whole ($\chi^2 = 271.384$, 3, $p < .001$) and each category are statistically significant ($p < .001$). The odds of being referred to the network are greatest for retirees (1.113) and least likely for active duty dependents (.080).

Differences in referrals rates based on gender and beneficiary category were noted. Are these differences clinically indicated, necessary, and acceptable? The fact is that variations exist. Deeper clinical investigations are required to address questions of quality and equity. This analysis is an attempt to provide information to support clinical decision-making in the GI clinic. Referrals to the network are a function of beneficiary category and gender.

Provider Profiling

Provider profiling focused on trends of primary care providers' consults to the GI clinic. Three fiscal years were analyzed for trends and patterns of increased activity in consults to the GI clinic. Fiscal Year 2004 has begun to show a decrease in the number of consults seen from Primary Care providers. This decrease may be attributed to the GI clinic being more active in educating and training the primary care staff. Conducting training sessions for the primary care

providers reduced the number of unnecessary consults sent to GI.

By decreasing or limiting the number of consults from primary care, the clinic is able to keep more patients within the MTF who they would have otherwise disengaged. It also ensures that only patients that truly need to be seen by a GI specialist are referred to the clinic. This allows the clinic to offer more space within the clinic for care and has decreased the number of referrals to the network strictly due to inability to care for the increased number of patients.

Appointment Utilization / Template Management

Proper utilization of appointments is a very important aspect of preparation for T-NEX, the key to whether the clinic can recapture some patients that have been disengaged to the network. As noted previously, there appears to be a large number of Follow-up appointments that have not been filled in the last two years. There also appears to be a very small portion (7.2% and 3.2%) of unbooked Procedure and New appointments.

Figure 10. Staff Provider Case Mix

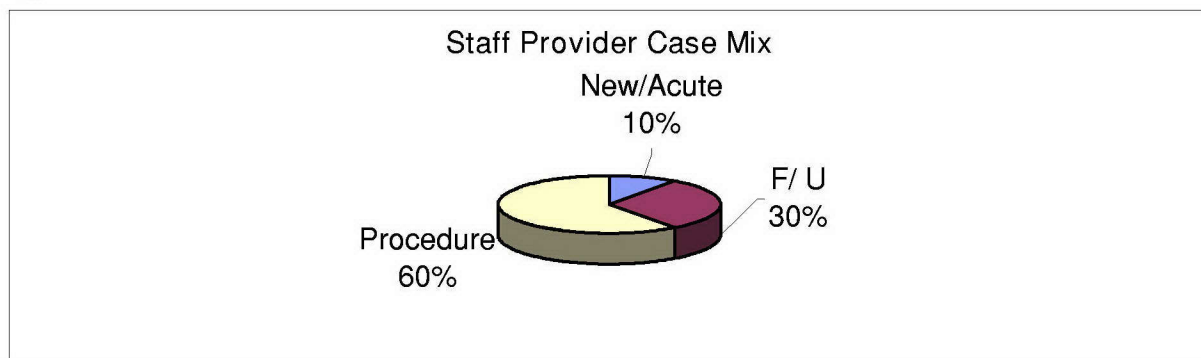


Figure 10 shows that the mix within the GI clinic has been 60% Procedures, 30% Follow-up appointments, and 10% New patients. This mix might need to be changed to include a larger portion of Procedures since many of the referrals to the network involve Procedures

There are limitations to adding more Procedures to the schedule. There already is a bottleneck in the flow for patients who have appointments for Procedures. Through interviews with staff, it appeared the staff believed that there is a shortage of nurses and support staff to cover procedures. The patient must be in the post-operative area for at least twenty minutes for recovery and patient education with the nurse.

At present the provider to support staff is 1:3.2. This ratio is deceiving because fellows use support staff also, but are not counted as providers. This reduces productivity and restricts increasing the number of procedures in the schedule. The command manning documents have a total of seven Corpsmen positions assigned to the GI clinic and there are currently eight corpsmen in the clinic. The staff has stated in interviews that they would like to add more procedures to the schedule but the staffing levels have limited their ability to add any more procedures. However, the staff mix of 3.2 support staff to provider is optimal to support current operations and possible increases in productivity. The current command standard for support staff is 2.5 support staff to 1 provider. The GI clinic greatly exceeds that at this time.

Analysis of the last two fiscal years shows that there are still a minimal amount of appointments available and are often filled by walk-ins. The staff did state that they often fill appointments that have been cancelled by the patient. No-Shows also can have effect on appointment utilization since the clinic has no prior notice of the patients not being present for the appointment. It does appear that the clinic's No Show rates are very low.

The clinic schedule is currently developed six weeks in advance. The command policy is 90 days in advance. The schedule is not 90 days in advance because of staff deployments and uncertainty of deployment schedules in the near future. Staff providers also feel that it is too difficult to predict what might occur in the near future

Costs Associated with Referrals

Analysis of the top ten conditions and procedures by volume and costs was conducted. This analysis may shed light on what conditions might be beneficial, from a cost perspective, to recapture. However, the goal is not just to recapture procedures. The goal is to reduce costs to the MTF. The GI clinic cannot know where to begin recapturing disengagements without understanding volume, unit cost and constraints in capacity such as GME requirements and deployments.

Table 8 illustrates the Make versus Buy decision for the top procedures based on unit cost per procedure. Note that it cost more to perform one of the top five procedures in-house versus

sending these types of procedures to the network. However, four procedures represent savings to facility if the GI clinic can keep these procedures in-house. A Colonoscopy with Lesion Removal can save the GI Clinic \$181.34 per visit. If the GI clinic can recapture this procedure, it could save \$7434.94. Colonoscopies are also cheaper to perform in-house. The in-house cost of performing a colonoscopy is \$320.12. That represents a savings of \$112.11 per visit compared with network unit costs. This would represent a total savings of \$2,130.09. Diagnostic colonoscopies are \$128.14 cheaper per unit cost, if they are performed in-house. This represents the largest total savings of \$15,120.52. The final procedure that could be performed in-house for savings is a colonoscopy with biopsy. The total savings for this procedure is \$1,116.50. The total savings for these four procedures, if performed in-house, would be \$25,802.05. These are the four procedures that the clinic can target to recapture that would offer a financial benefit to the clinic.

Table 8. CPT Codes – Make vs. Buy (Unit Cost).

CPT Codes - Make vs. Buy				
CPT Code	Description	In-House	Network	Gain/(Loss)
47000	Needle Biopsy Liver	\$ 704.32	\$ 567.48	\$ (136.84)
45383	Lesion Rmval Colonoscopy	\$ 386.04	\$ 567.38	\$ 181.34
45384	Colonoscopy	\$ 320.12	\$ 432.23	\$ 112.11
45380	Colonoscopy,Biopsy	\$ 382.86	\$ 421.36	\$ 38.50
45378	Diag Colonoscopy	\$ 360.50	\$ 488.64	\$ 128.14

The only procedure of five procedures listed above that was cheaper, if performed in the network, was needle biopsy of the liver. This might be a procedure that should be referred to the network instead of being seen at the GI clinic. If these procedures were referred to the network, it would save the clinic over \$25,000, based on the volume of for Fiscal Year 2003.

Table 9 shows that the evaluation of the top ten ICD-9 codes by visit and volume indicated that the benign neoplasm of the large bowel was the highest in volume and costs; its unit cost per procedure was \$218.97. It is significantly cheaper to keep these patients in-house. The unit cost saved per procedure was \$140.35. If these patients are kept in-house and not referred to the network, the GI clinic could save \$16,561.30. There are three other diagnoses that the clinic

can target for recapture that would offer a financial benefit to the clinic.

Table 9. ICD-9 Codes – Make vs. Buy (Unit Cost)

ICD - 9 Codes - Make vs. Buy				
ICD - 9 Code	Description	In-House	Network	Gain/(Loss)
4550	Int Hemrrhoid	\$ 309.24	\$ 285.56	\$ (23.68)
2113	Benign Neoplasm Lg Bowel	\$ 281.97	\$ 422.32	\$ 140.35
53550	GSTR / DDNTS	\$ 269.25	\$ 249.33	\$ (19.92)
5781	Blood in Stool	\$ 194.64	\$ 234.78	\$ 40.14
56210	DVRTCLI Colon w/o Hemrhg	\$ 192.63	\$ 204.45	\$ 11.82

The diagnosis of blood in stool offers the next greatest financial savings to the facility with an average savings of \$40.14 per visit. Another diagnosis that could be considered for recapture from the network is DVRTCLI Colon without hemorrhage at a savings of \$11.82 per visit. Focus on these three conditions could have a financial savings to the command under TNEX of over \$20,000.

There were two diagnoses that the network is able to care for cheaper than NMCSO. The GI clinic may be able to refer patients with these conditions to the network and save money. If patients with a diagnosis of Internal Hemorrhoid and GSTR / DDNTS, it could provide a savings to the clinic of over \$10,000.

There were also several procedures that did not have the highest unit cost but were more expensive in-house than the network. The conditions that could be targeted to be sent to the network and net a savings to the GI clinic are Rectal / Anal Hemorrhage, Esophageal Reflux, and Reflux Esophagitis. All three of these procedures unit cost were below the average cost of a GI Clinic visit of \$212.26.

Although the clinic does not have the access capacity to provide care to all of above targeted procedures and diagnoses, they will, if they shift the patients that have conditions or procedures that have higher in-house costs to the network. This will open access for recapture of the procedures and conditions that are cheaper in-house.

Conclusions and Recommendations

The purpose of this study was to develop a strategy to prepare for the next generation of managed care support contracts at the clinic level. The study identified areas of concern within the clinic that have resulted in the loss of Prime patients to the contractor and recommend possible solutions and better business practices. The following is the strategy that the GI clinic should undertake if they want to better prepare for T-NEX.

First, The clinic should attempt to add one more hour of appointments to each provider to meet the MGMA 75th percentile of 12 units per hour. There is a possibility of additional appointments in the morning and in the late afternoon. The GME requirements decrease the staff's capability to see more patients. However, the GME fellowship will not be eliminated so the clinic staff will have to work within the constraints of the GME requirements while still attempting to optimize services and access. The support staffing should be maintained at current levels. The support staff ratio of 3.2 support staff to staff provider is optimal. The clinic management should also begin to use the NMCS D Resource Allocation and Productivity Tool to continually analyze clinic capacity and staff productivity.

Second, the GI clinic should continue to conduct the referral / disengagement process that is currently in place. This process has decreased the number of disengagements to the network and also increased staff and customer satisfaction. Clinic management should also begin to monitor disengagement patterns more closely so they can determine if the appropriate patients are being sent to the network. Through analysis of variation of referral patterns, it appears patients that are not Prime are more likely to be referred to the network than Prime patients. The clinic management must continue to monitor beneficiary categories they refer to the network. Attention should first be placed on Active Duty service members and Prime enrollees. If there is

additional space or GME requirements, then other beneficiary groups should be considered.

Third, The GI clinic must continue to conduct education and training seminars with the Primary Care providers. This will ensure that the Primary care providers are conducting all procedures, tests, and labs that are needed before referring the patient to GI. This should eliminate a great number of unnecessary referrals that the GI clinic has experienced over time. Since this training has begun, there has been a decrease in the volume of referrals to the GI Clinic.

Fourth, the GI clinic should add one hour of appointments to the current provider schedules. One additional hour of bookable time will increase the GI staff provider's encounters per day to 12.14. This is above the MGMA standard of 12 encounters per day. This will also create some capacity for additional patients to be seen within the clinic. The clinic should also continue with the current case mix of 60% Procedures, 30% Follow-up, and 10% New patients. Based on historical data, this appears to be the right mix based on demand. The GI clinic manager should begin to utilize CHCS to track the patients who have been referred to the network. If an appointment is unfilled, the clinic manager could contact a patient on the list and bring them back in-house. This will enable the clinic to make best use of their available appointments and resources.

Lastly, the clinic should also focus on recapturing the procedures and diagnoses that have the largest financial benefit to the clinic. If the conditions and procedures listed in the discussion above are given attention, there could be considerable financial savings for the clinic.

The clinic should attempt to recapture the following procedures and diagnoses from the network because they represent the greatest savings to the clinic: Colonoscopy with Lesion Removal, Colonoscopy, Colonoscopy with Biopsy, Diagnostic Colonoscopy, Benign Neoplasm of Large Bowel, Blood in the Stool, and DVRTCLI without hemorrhage. These procedures and

diagnoses show a savings of over \$50,000. The following procedures and diagnoses should be referred to the network to because they can be performed in the network at a better financial cost: Needle Biopsy of the Liver, Internal Hemorrhoid, GSTR / DDNTS, Rectal/ Anal Hemorrhage, Esophageal Reflux, and Reflux Esophogitis. These procedures and conditions represent a savings of over \$40,000 to the GI clinic. By referring these procedures to the network, access and capacity will be greatly improved. If these procedures are referred to the network, the clinic will have excess capacity and will be able to recapture all other procedures and conditions that are financially or educationally suitable to the GI clinic.

In closing, I believe that the GI clinic is progressing towards being prepared for TNEX and revised financing. They must continue to explore for ways to recapture patients and stop leaks to the network. It is important to note that some referrals will always happen. It's controlling which referrals that matters. The clinic management is capable and the staff is open to change if it will benefit the patients they serve. With that combination in place, the GI clinic will succeed under TNEX.

References

- American Psychological Association. (2001). *Publication Manual of the American Psychological Association* (5th ed.). Washington: American Psychological Association.
- Christopher, C. (2003, January 21). *Talking Paper on Revised Financing Principles*. Retrieved September 22, 2003, from <http://www.tricarecr.carson.army.mil/tnex/revisedfinancing.doc>
- CITPO (2003). *Overview of CHCS*. Retrieved October 13, 2003, from <http://www.citpo.ha.osd.mil>
- Cohen, D. L., & Lillie, S. (2001 July 3). Concept Paper on Enrollment in TRICARE Plus for MTF Commanders (). Falls Church, Virginia: TRICARE Management Activity.
- Cooper, D., Schindler, P. (2000). *Business Research Methods* (7th ed.). Boston: McGraw-Hill Irwin.
- Eden, S., Hall, J., Ringer, C., & Modderman, M. (2003, January). *Strategies for Effective Monitoring of MTF Performance in Today's Business of Revised Financing*. Retrieved September 22, 2003, from http://tricare.osd.mil/conferences/2003/downloads/sam_eden.ppt
- EIDS (2003). *Providing Decision Support for a World Class Military Health System*. Retrieved October 13, 2002, from <http://www.eids.ha.osd.mil>
- Evans, P. (2003, May). *The T-NEX Business Environment*. Retrieved September 24, 2003, from http://www.region4.tricare.osd.mil/conferences/Summer_2003/Plenary/paula_evans.ppt
- Fisher, L. W. (2002). Comparison of Specialty Referral Patterns of Primary Care Providers. *Journal of Healthcare Management*, 47(3), 197-204.
- Ford, N. (2003, August). *Defense Health Program: Business Plans in the Context of Financial Management*. Retrieved September 23, 2003, from [http://www.tricarecr.carson.army.mil/tnex/businessplansandresporce allocation.ppt](http://www.tricarecr.carson.army.mil/tnex/businessplansandresporce%20allocation.ppt)

- General Accounting Office (1999 November). *Defense Health Care: Tri-Service Strategy Needed to Justify Medical Resources for Readiness and Peacetime Care* (). Washington: General Accounting Office.
- Grazier, K. L. (1999). The Future of Managed Care. *Journal of Healthcare Management*, 44(6), 423-426.
- Griffith, J. R., (1995). *The Well-Managed Health Care Organization* (3rd ed.). Ann Arbor: Health Administration Press.
- Hallowell, B. (2003). Tips on Transforming an Organization. *Healthcare Financial Management*, 57(6), 64-66.
- Ivancevich, J. M., & Matteson, M. T. (1999). *Organizational Behavior and Management* (5th ed.). Boston: McGraw-Hill.
- Johns, G. (1998). *Organizational Behavior* (6th ed.). New York: HarperCollins.
- Kirby, E. G. (1998). The Effect of Normative Social Forces on Managed Care Organizations. *Journal of Healthcare Management*, 43(1), 81-96.
- KPMG Consulting (2000 April 27). *MHS Contractual Issues*. Washington: TRICARE Management Activity.
- Leaders, J. (2003). *Why T-NEX?* Retrieved September 23, 2003, from <http://www.tricarene.army.mil/dba.htm>
- Likert, R. (1961). *New Patterns of Management*. (1st ed.). New York: McGraw-Hill.
- McGuire, K. (2003, April). *TRICARE - The Next Generation*. Retrieved September 23, 2003, from <http://www.tricare.osd.mil/pmo/tnex>
- MHS Data Quality Management Control Review List. Retrieved April 2, 2004, from <http://www.tricare.osd.mil/dataquality/downloads/DQMCChecklist.pdf>
- MHS Data Quality Statement MTF Commander checklist. Retrieved April 2, 2004, from http://www.tricare.osd.mil/dataquality/downloads/DQMC_9May_C.pdf

- Muchinsky, P. M. (1998). *Psychology Applied to Work* (5th ed.). Pacific Grove, California: Brooks / Cole Publishing.
- Munter, D. W. (2003). *Revised Financing*. Retrieved September 22, 2003, from <http://www.hsriv.keesler.af.mil/BOG/BOG/RevisedFinancing.ppt>
- Naval Medical Center San Diego. (2003). *Naval Medical Center Web Site*. Retrieved October 2, 2003, from <http://www.nmcsd.med.navy.mil>
- Neufeldt, V., & Guralnik, D. (1988). Webster's New World Dictionary of American English (3rd ed.). New York: Webster's New World.
- Neuhauser, D. (1993). Fourth biennial regenstrief conference: methods of comparing patterns of care, October 27-29, 1991. *Medical Care*, 31(5), YS3-YS5.
- Newstrom, J. W., & Davis, K. (1998). *Organizational Behavior: Human Behavior at Work* (10th ed.). Boston: McGraw-Hill.
- Sherman, A., Bohlander, G., & Snell, S. (1999). *Managing Human Resources* (11th ed.). Cincinnati: Western College Publishing.
- Tinling, W. (2003). *T-NEX: The Next Generation of Contracts*. Retrieved September 23, 2003, from <http://www.tricarecr.carson.army.mil/NEXTGENERATION.htm>
- Triola, M. (1998). *Elementary Statistics* (7th ed.). New York: Addison-Wesley.

Appendix A. Explanation of Abbreviations, Symbols, and Terms

a. Abbreviations:

APPT	Appointment
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
CHCS	Composite Health Care System
CITPO	Clinical Information Technology Program Office
CPT	Current Procedural Terminology
DFAS	Defense Finance and Accounting Service
DHOP	Directorate for Healthcare Operations
DOD	Department of Defense
DVRTCLI	Diverticulitis
EST	Established Appointment
FTE	Full Time Equivalent
FY	Fiscal Year
GAO	General Accounting Office
GI	Gastrointestinal
GMP	Graduate Management Project
GPRMC	Global Patient Movement Requirement Center
HMO	Health Maintenance Organization
ICD-9	International Classification of Diseases, 9 th Revision
KPMG	Klynveld, Peat, Marwick and Gerdeler (Names of founders)
LVN	Licensed Vocational Nurse
MCSC	Managed Care Support Contact
MEPRS	Medical Expense and Performance Reporting System
MTF	Military Treatment Facility
M2	MHS Management Analysis and Reporting Tool
NMCSD	Naval Medical Center San Diego
PROC	Procedure Appointment
RVU	Relative Value Unit
SAV	Small Area Variation
SPEC	Specialty Appointment
SPSS	Statistical Package for Social Scientists
T-NEX	TRICARE Next Generation Contracts
TRICARE	TRICARE

b. Symbols

N	Population
n	Sample
α	Alpha
β	Beta, product of the partial regression coefficients and the independent predictor variables or symbol for Type II error
χ^2	Wald Chi-Square
ψ	Odds Ratio

c. Terms:

Active Duty Service Member: A person who serves full time in a uniformed service under orders that do not specify thirty days or less.

Alpha Level: Level set at .05. Probability of the likelihood that a trend is not statistically significant (95%; 5% chance of chance).

“At Risk” Funds: CHAMPUS dollars which the Managed Care Support Contractor manages subject to utilization management criteria which they apply based upon best commercial practices of Department of Defense (DOD) requirements.

Benchmark: The best-known value for a specific measure, from any source.

Beneficiary: One who is designated to receive or benefit from something.

Binary Logistic Regression: A form of regression that is used when the dependent is a dichotomy and the independents are continuous variables, categorical variables, or both.

Biopsy: A biopsy is the removal of a small piece of tissue for microscopic examination and/or culture, often to help the physician make a diagnosis.

CHAMPUS: Civilian Health and Medical Program of the Uniformed Services. An insurance program began in 1966, which covered active duty and retired career military persons, their dependents and survivors. Once TRICARE was created, CHAMPUS became known as TRICARE Standard.

Composite Health Care System (CHCS): Provides worldwide-automated medical information system support to all Military Treatment Facilities in providing comprehensive health care to uniformed service personnel, retirees, and their families. CHCS functions include patient registration, admission, disposition, and transfer; inpatient activity documentation; outpatient administration data; appointment scheduling; laboratory; drug/laboratory test interaction; quality assurance, radiology, clinical dietetic administration; pharmacy; results reporting and order entry; ad hoc reporting; and managed care. CHCS Interfaces with over to 40 other clinical and administrative systems

Change: To change is to make different in some particular, to make radically different, to give a different position, course, or direction to, to replace with another, to make a shift from one to another, to exchange for an equivalent sum or comparable item, to undergo a modification of, to undergo transformation, transition or substitute

Colonoscopy: A colonoscopy is a procedure for viewing the interior lining of the large intestine (colon) using a small camera called a colonoscope (which is a flexible fiber-optic tube).

Consultation: A deliberation with a specialist concerning the diagnosis or treatment of a patient. To qualify as a consultation (for statistical measure) a written report to the requesting

healthcare professional is required.

Covariate: interval independents.

CPT Code: A list of terms and codes that provide a uniform language for reporting medical services and procedures. They are used in reporting to health insurance programs for claims processing, developing medical care review guidelines, and in medical education and research.

Cross Tabulation: A technique for comparing two classification variables, usually nominal data variables.

Dependent Variable: The variable measured, predicted, or otherwise monitored by the researcher, expected to be affected by a manipulation of the independent variable.

Descriptive Statistics: Display characteristics of the location, spread, and shape of an array of data.

Dichotomous Variable: Proportion of group membership between 0 and 1.

Disengagement: The discontinuance of medical treatment of a non-active duty patient for a single episode of care when the Military Treatment Facility lacks the capability or the services to provide necessary treatment, and is accomplished after alternative sources of care and attendant costs have been explained to the patient or the sponsor.

DVRTCLI: Diverticulitis. Infection or inflammation of the diverticulum.

Efficiency: The return or output achieved for a given level of input or resources. The ratio of output to input, or input to output.

Endoscopy: An endoscope is a medical device consisting of a camera mounted on a flexible tube. Small instruments can be used to take samples of suspicious tissues through the endoscope. In gastrointestinal endoscopy, this device is inserted through the mouth or anus. For other areas, small incisions are made.

Ethics: The branch of philosophy dealing with values relating to human conduct, with respect to the rightness and wrongness of certain actions and to the goodness and badness of the motives and ends of such actions.

Equity: Fairness; impartiality; justice. Anything that is fair or equitable.

Fellowship: Graduate Medical Education experience following residency, often not in continuity, which is formally structured and focused on a specialty area. It usually involves investigative commitment and achievement of specific technical or clinical skill. It can result in specified certification.

Fiscal Year: The twelve month accounting period of the Federal Government running from October 1 to September 30 of the following year.

Frequency: The fact of occurring often or repeatedly; frequent occurrence. The number of times an action or occurrence is repeated in a given period.

Gastroenterology: The branch of medical science concerned with the study of the physiology and pathology of the stomach, intestines, and related structures, such as the esophagus, liver, gallbladder, and pancreas.

Health Maintenance Organization (HMO): Health insurance plans emphasizing comprehensive care under a single insurance premium and using a variety of devices to control cost and quality.

Hypothesis: A proposition to explain an occurrence or a phenomenon; conjecture to guide investigation; a theory in testable form.

Inferential Statistics: Use of probability to test functional relationship hypotheses between dependent and independent variables.

ICD-9 Codes: A statistical classification system that arranges diseases and injuries into groups according to established criteria. Most ICD-9 codes are numeric and consist of three, four or five numbers and a description.

Independent Variable: Leads to outcomes; a variable that presumably exerts an influence on or explains variations in the dependent variable.

Internal Medicine: The discipline encompassing the study and practice of health promotion, disease prevention, diagnosis, care, and treatment of men and women from adolescence to old age, during health and all stages of illness.

Lead Agent: The designated major military medical hospital or center that acts as a TRICARE region's lead agent, having tri-service responsibility for the development and execution of a single, integrated health care network.

"Leak" to the Network: To consistently permit a large volume of Prime patients, who should primarily be seen at the MTF, to be referred out to the Managed Care Support Contractor for care. This situation can cost the MTF and clinic a large amount of funds.

Managed Care: Managed care contains costs, provides quality in health delivery and constrains inappropriate care by using combined economic leverage of coordination and competition. Focus is on an enrolled population, designated providers within the organization system and management of shared risk for both provider and patient.

Managed Care Support Contracts: A fixed price, at risk contract, supporting the DoD TRICARE program. These contracts support Lead Agents by combining civilian managed care networks with fiscal and administrative support, and compliment the majority of services provided in the MTFs.

MEPRS: A uniform reporting methodology designed to provide consistent principles, standards, policies, definitions, and requirements for accounting and reporting of expense, manpower, and performance data by DoD fixed military medical and dental treatment facilities. Within these specific objectives, the MEPRS also provides, in detail, uniform performance indicators, common expense classification by work centers, uniform reporting of personnel utilization data by work centers, and a cost assignment methodology.

Medical Treatment Facility (MTF): Refers to the military medical health care community and its regent military medical activities and communities.

M2: A powerful tool used to obtain summary and detailed views of population, clinical, and financial data from all MHS regions. M2 includes Military Treatment Facility (MTF) and commercial network claims data integrated with eligibility and enrollment data. This integrated data enhances support to healthcare managers across the MHS. M2 allows users to perform trend analyses, conduct patient and provider profiling studies, and conduct business case analyses to maximize health plan efficiency

Network Provider: Care provided by the network of contractor-operated providers and facilities (owned, leased, arranged) that link the providers or facilities with the prime contractor as part of the total contracted delivery system. This is a network provider is one who serves TRICARE beneficiaries by agreement with the prime contractor as a member of the TRICARE Prime network of any other preferred provider network or by any other contractual agreement with the contractor.

Odds Ratio: A way of comparing whether the probability of a certain event is the same for two groups. An odds ratio of 1 implies that the event is equally likely in both groups. An odds ratio greater than one implies that the event is more likely in the first group. An odds ratio less than one implies that the event is less likely in the first group.

Ordinal: A scale using numbers or symbols to rank order; its intervals are unspecified.

Preferred Provider Organization (PPO): A network of health care providers who provide services to patients at discounted rates or cost shares.

Primary Care: Medical care provided at the enrollee's first point of contact with the health care system, except for emergencies. It includes treatment of illness and injury, health promotion and education, identification of individuals at special risk, early detection of serious disease, an emphasis on preventive health care, and referral to specialists when appropriate.

Probability: A quantitative measure of the chances for a particular outcome or outcomes.

Productivity: the quality of being productive or having the power to produce.

Provider: A doctor, hospital, or other person or place that delivers medical services or supplies.

Provider Profiling: a research or investigative technique of determining group characteristics and using them to reduce the number of selection options; to profile (group by profiling).

Quality: The value or contribution of the output as defined by, or on behalf of, the customer.

Referral: The practice of sending a patient to another program or practitioner for services or advice that the referring source is not prepared or qualified to provide.

Region: A geographic area determined by the Government for civilian contracting of medical care and other services for TRICARE eligible beneficiaries.

Reliability: Precision and efficiency; measuring the variable right. Measuring if the hypothesis can be tested under similar circumstances with the same instrument time and time again.

Resource Sharing: An agreement between contractor and an individual MTF commander to provide or share equipment, supplies, facilities, or staff who are under contract or employed by the contractor for work in the MTF for the purpose of enhancing the capabilities of the MTF to provide needed patient care to beneficiaries.

Revised Financing: The fiscal environment in which the Military Treatment Facility (MTF) receives capitated funding for all TRICARE enrollees (active duty and CHAMPUS eligible), which is designed to cover their MTF and/or TRICARE Managed Care Support Contractor network care costs for the fiscal year; the MTF assumes financial responsibility to perform all care requirements of enrollees in return for receipt of the capitated payment from the respective Military Department.

RVU: Relative Value Unit. A unit of measure designed to permit comparison of the amounts of resources required to perform various provider services by assigning weight to such factors as personnel time, level of skill, stress level, and sophistication of equipment required to render a service. The Health Care Financing Administration requires that the three major components of a service or procedure provided under Medicare have RVUs assigned to them: physician work, practice expense, and malpractice expense

Sample: A subset of a population.

Template: Each Provider may have a template. The Provider Template shows all the Daily appointments and procedures that have been assigned to the Provider and which days they are in effect. Daily Templates may be assigned to specific days of the month or days of the week. Daily Templates can also be assigned as one-time events.

T-NEX: Name given for the next generation of TRICARE contracts.

Transition Management: A rigorous, comprehensive process for adopting a major new change or objective into an organization.

TRICARE: The DoD's managed health care program for active duty service members, service families, retirees and their families, survivors, and other TRICARE eligible beneficiaries. TRICARE is a blend of the military's direct care system of hospitals and clinics and civilian providers.

TRICARE Extra: One of the options under the TRICARE managed health care program. The member does not have to enroll in TRICARE Extra; they may use it on a case-by-case basis. The member sees a provider who is part of the TRICARE Extra network established by the local contractor, and pays reduced cost shares for care.

TRICARE Prime: The HMO-type option of the TRICARE managed health care program. The member enrolls one year at a time, and agrees to seek health care from the network of health care providers and institutions set up by the contractor for the region in which they live.

TRICARE Standard: A health care option provided under the TRICARE managed health care program where eligible beneficiaries may choose to receive care in facilities of the uniformed services, or from any TRICARE authorized provider with standard cost sharing.

Validity: Accuracy, effectiveness, measuring the right variable.

Variance: The (population) variance of a random variable is a non-negative number which gives an idea of how widely spread the values of the random variable are likely to be; the larger the variance, the more scattered the observations on average.

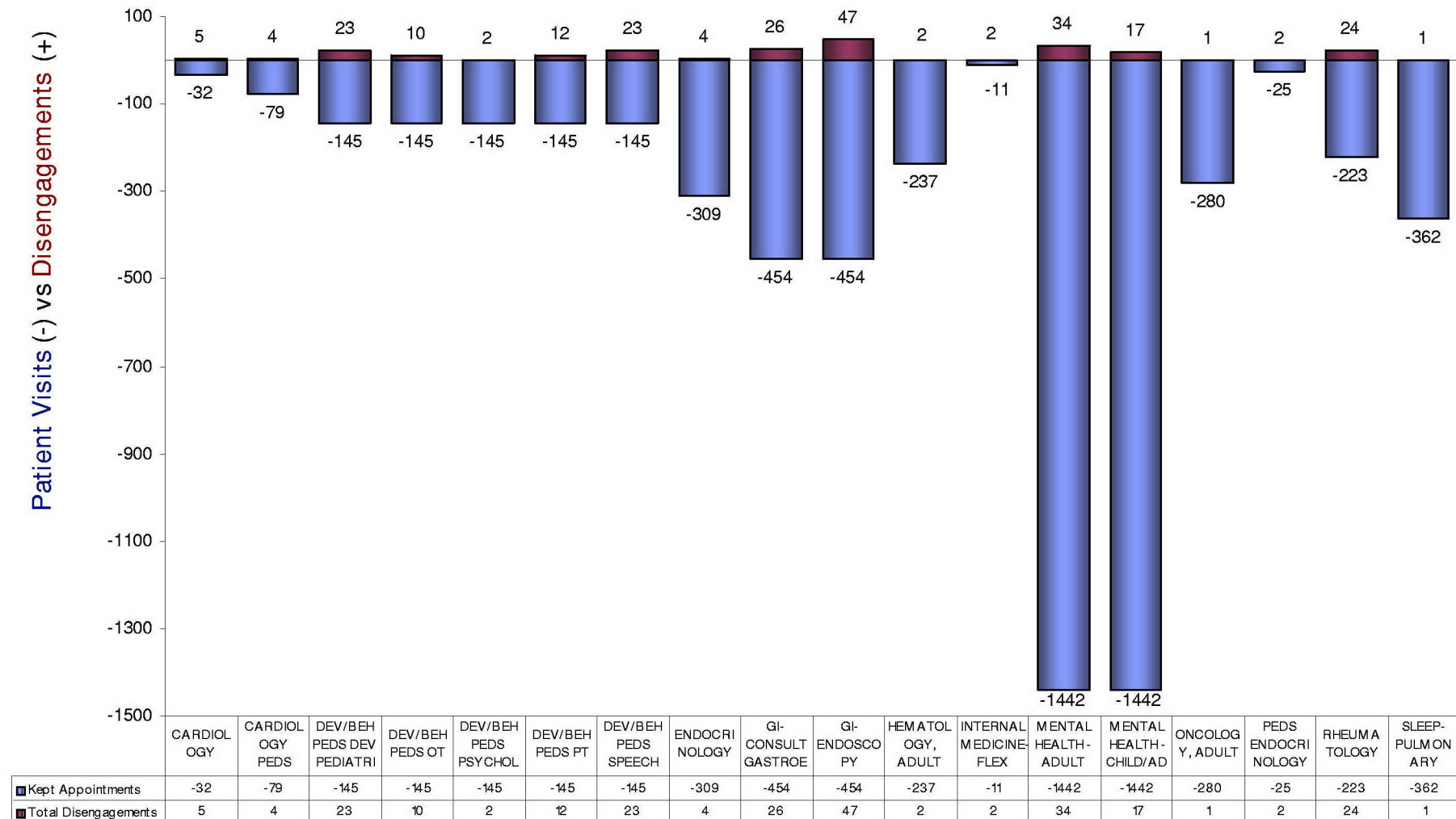
Volume: Amount; quantity

Wald Chi Square: A test of significance of the regression coefficient; it is based on the asymptotic normality property of maximum likelihood estimates

Appendix B. Disengagement Report

TOTALS (PATIENTS OF ALL BENEFICIARY CATEGORIES)

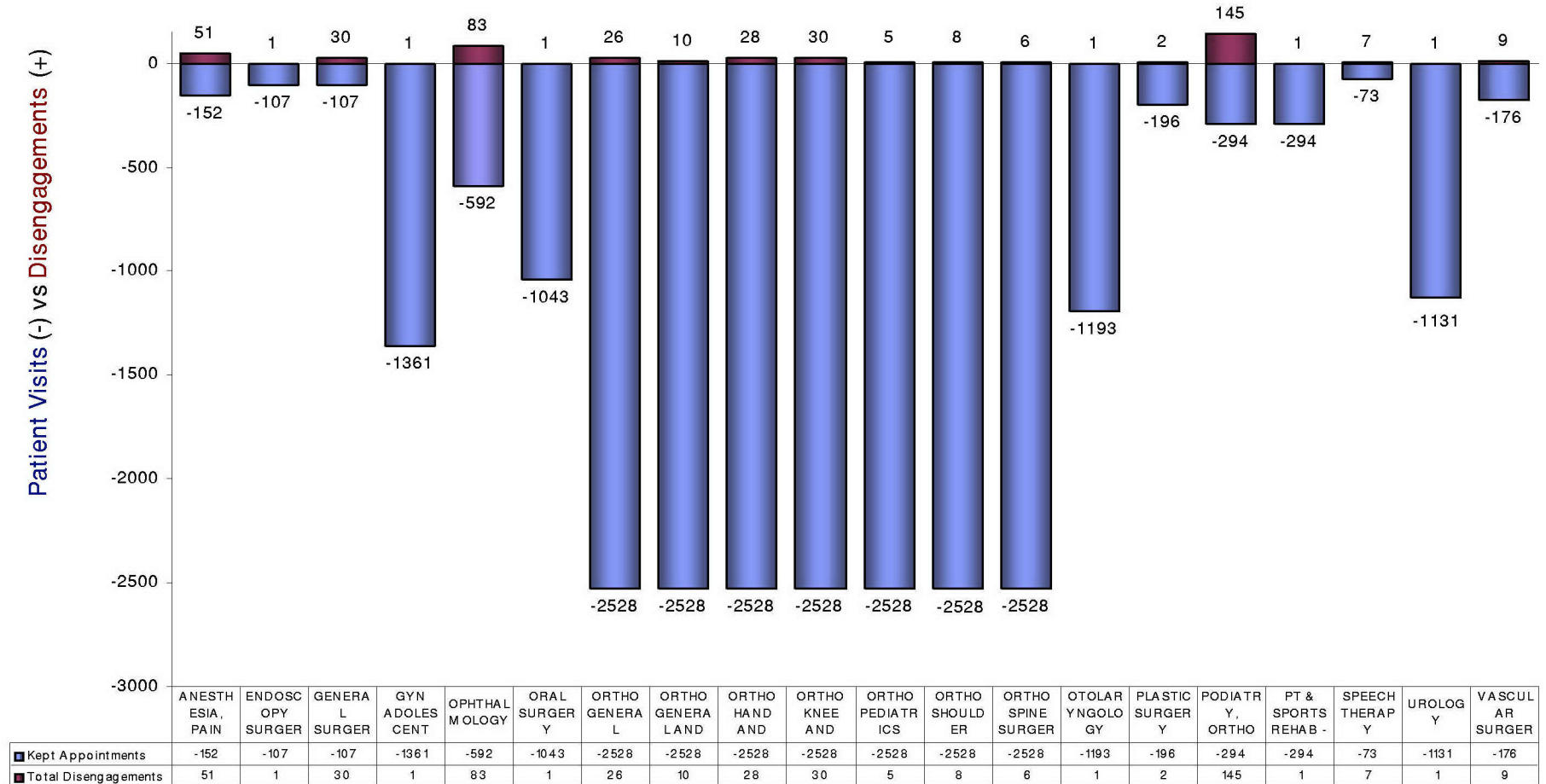
Disengagements v Kept Appointments (RAW) by DMS Clinics August-03



Appendix B. Disengagement Report

TOTALS (PATIENTS OF ALL BENEFICIARY CATEGORIES)

Disengagements v Kept Appointments (RAW) by DSS Clinics August-03



Appendix B. Disengagement Report

NMC TRICARE Disengagements August 2003

DIRECTORATE	Specialty Clinic	Kept Appointments	TRICARE PRIME	TRICARE PLUS	STANDARD	MEDICARE	CIVILIAN	INELIGIBLE	Total Disengagements
DSS	ANESTHESIA, PAIN CLINIC	-152	40	6	2	2	1	0	51
DSS	ENDOSCOPY SURGERY	-107	0	0	0	0	1	0	1
DSS	GENERAL SURGERY	-107	27	2	1	0	0	0	30
DSS	GYN ADOLESCENT	-1361	1	0	0	0	0	0	1
DSS	OPHTHALMOLOGY	-592	44	33	4	2	0	0	83
DSS	ORAL SURGERY	-1043	1	0	0	0	0	0	1
DSS	ORTHO GENERAL AMBULATORY, NTC	-2528	24	2	0	0	0	0	26
DSS	ORTHO GENERAL AND TRAUMA	-2528	8	2	0	0	0	0	10
DSS	ORTHO HAND AND UPPER EXTREMITY	-2528	26	1	1	0	0	0	28
DSS	ORTHO KNEE AND LOWER EXTREMITY	-2528	24	3	3	0	0	0	30
DSS	ORTHO PEDIATRICS	-2528	5	0	0	0	0	0	5
DSS	ORTHO SHOULDER	-2528	5	3	0	0	0	0	8
DSS	ORTHO SPINE SURGERY	-2528	4	1	1	0	0	0	6
DSS	OTOLARYNGOLOGY	-1193	1	0	0	0	0	0	1
DSS	PLASTIC SURGERY	-196	2	0	0	0	0	0	2
DSS	PODIATRY, ORTHO NTC	-294	109	29	3	4	0	0	145
DSS	PT & SPORTS REHAB - NTC	-294	0	1	0	0	0	0	1
DSS	SPEECH THERAPY	-73	7	0	0	0	0	0	7
DSS	UROLOGY	-1131	1	0	0	0	0	0	1
DSS	VASCULAR SURGERY	-176	9	0	0	0	0	0	9
	TOTAL Kept Appointments MINUS Duplicates!	-8846	338	83	15	8	2	0	446

Appendix B. Disengagement Report
NMC TRICARE Disengagements August 2003

DIRECTORATE	Specialty Clinic	Kept Appointments	TRICARE PRIME	TRICARE PLUS	STANDARD	MEDICARE	CIVILIAN	INELIGIBLE	Total Disengagements
DMS	CARDIOLOGY	-32	3	0	2	0	0	0	5
DMS	CARDIOLOGY PEDS	-79	4	0	0	0	0	0	4
DMS	DEV/BEH PEDS DEV PEDIATRICIAN	-145	23	0	0	0	0	0	23
DMS	DEV/BEH PEDS OT	-145	10	0	0	0	0	0	10
DMS	DEV/BEH PEDS PSYCHOLOGY	-145	2	0	0	0	0	0	2
DMS	DEV/BEH PEDS PT	-145	11	0	1	0	0	0	12
DMS	DEV/BEH PEDS SPEECH PATHOLOGY	-145	23	0	0	0	0	0	23
DMS	ENDOCRINOLOGY	-309	4	0	0	0	0	0	4
DMS	GI-CONSULT GASTROENTEROLOGY	-454	19	3	2	2	0	0	26
DMS	GI-ENDOSCOPY GASTROENTEROLOGY	-454	33	6	7	1	0	0	47
DMS	HEMATOLOGY, ADULT	-237	1	1	0	0	0	0	2
DMS	INTERNAL MEDICINE-FLEX	-11	2	0	0	0	0	0	2
DMS	MENTAL HEALTH - ADULT OUTPT	-1442	17	3	11	2	1	0	34
DMS	MENTAL HEALTH - CHILD/ADOL	-1442	16	0	1	0	0	0	17
DMS	ONCOLOGY, ADULT	-280	0	1	0	0	0	0	1
DMS	PEDS ENDOCRINOLOGY	-25	2	0	0	0	0	0	2
DMS	RHEUMATOLOGY	-223	20	2	2	0	0	0	24
DMS	SLEEP-PULMONARY	-362	1	0	0	0	0	0	1
	TOTAL Kept Appointments MINUS Duplicates!	-3599	191	16	26	5	1	0	239

Appendix B. Disengagement Report
NMC TRICARE Disengagements August 2003

DIRECTORATE	Specialty Clinic	Kept Appointments	TRICARE PRIME	TRICARE PLUS	STANDARD	MEDICARE	CIVILIAN	INELIGIBLE	Total Disengagements
DAS	CARDIAC REHAB - CARDIO	-10	1	1	0	0	0	0	2
DAS	OCCUPATIONAL THERAPY CLINIC	-373	20	1	1	0	0	0	22
DAS	PHYSICAL THERAPY - BACK SCHOOL	-3238	0	2	1	0	0	0	3
DAS	PHYSICAL THERAPY - KNEE SCHOOL	-3238	0	1	0	0	0	0	1
DAS	PHYSICAL THERAPY - OUTPATIENT	-3238	22	14	14	5	1	2	58
DAS	RADIOLOGY	-152	1	0	0	0	0	0	1
DAS	RADIOLOGY THERAPY/ONCOLOGY	-152	2	1	0	0	0	0	3
	TOTAL Kept Appointments MINUS Duplicates!	-3773	46	20	16	5	1	2	90

Appendix B. Disengagement Report

EXTERNAL DISENGAGEMENTS AUGUST 2003

SPECIALITY REQUESTED	Auto Diseng	Healthnet > 72 Hours	Disengaged	Grand Total
BREAST HEALTH CLINIC	0		2	2
DERMATOLOGY	0		1	1
ENDOCRINOLOGY	0		5	5
GASTROENTEROLOGY	3		13	16
GENERAL SURGERY	1		6	7
HEMATOLOGY/ONCOLOGY	0		4	4
NEUROLOGY	0		1	1
NEUROSURGERY	0		1	1
OCCUPATIONAL THERAPY	0		2	2
ONCOLOGY	0		1	1
OPHTHALMOLOGY	0		1	1
ORTHOPEDICS	0		37	37
OTOLARYNGOLOGY/ENT	0		1	1
PAIN CLINIC	0		1	1
PEDS DEVELOPMENTAL	0		3	3
PEDS NEUROLOGY	0		1	1
PEDS ORTHOPEDICS	0		4	4
PLASTIC SURGERY	1		9	10
PODIATRY	0		8	8
RHEUMATOLOGY	0		4	4
SPEECH THERAPY	0		1	1
VASCULAR SURGERY	0		8	8
Grand Total	5		114	119

REFERRED SERVICE	TOTAL
HEME/ONC (UCSD BONE MARROW TRANSPLANT)	1
MENTAL HEALTH	1
MENTAL HEALTH (PSYCH EVAL)	1
MENTAL HEALTH (PSYCH TESTING)	1
MENTAL HEALTH (PSYCHOTHERAPY)	1
NEUROLOGY (OUTSIDE CA)	1
NEUROLOGY (CALIF. TAY SACHS PROGRAM)	2
NEUROLOGY (UCSD GENETIC TESTING)	1
OB (GLOBAL OB, OUTSIDE CA)	1
OCCUPATIONAL THERAPY	1
OCCUPATIONAL THERAPY (OUTSIDE CA)	1
OPHTHALMOLOGY (OUTSIDE CA)	1
ORTHO (S/P MVA)	1
PAIN CLINIC	15
PHYSICAL THERAPY	1
PHYSICAL THERAPY (HOME)	2
PHYSICAL THERAPY (OUTSIDE CA)	10
PHYSICAL THERAPY (PALM SPRINGS AREA)	1
RAD/ONCOLOGY (2ND OPINION)	1
RADIOLOGY (RAWLEY, CA)	1
RADIOLOGY (OUTSIDE CA)	1
RADIOLOGY (PET SCAN)	3
SPEECH THERAPY (OUTSIDE CA)	1
UROLOGY (FERTILITY TEST/SPERM BANKING)	2
VASCULAR (MAYO CLINIC)	1
Grand Total	53

Appendix C. GI Clinic Referral / Consult Process

GI Clinic Referral / Consult Process

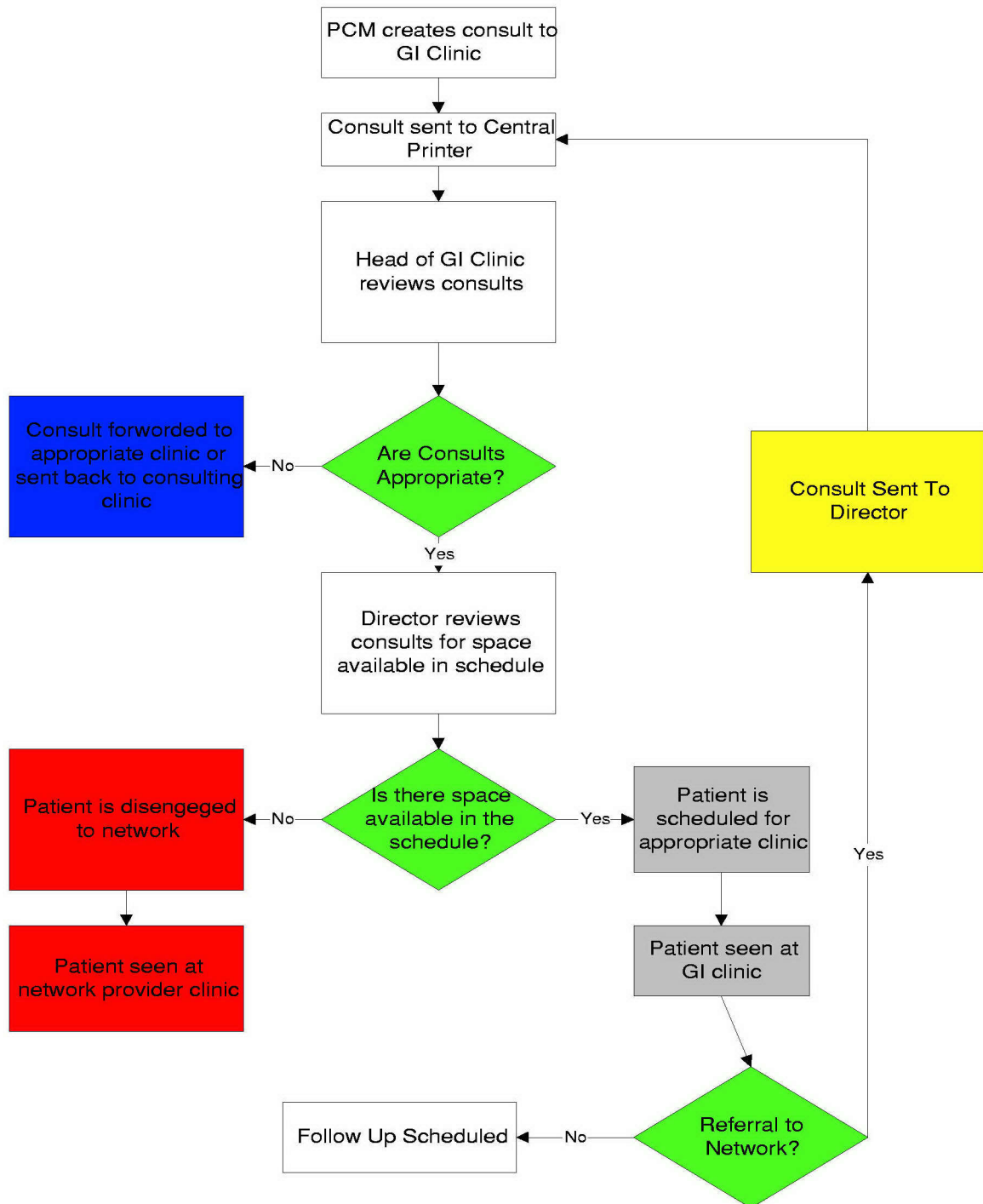


Table 1. Assumptions for TAD, Leave, Holidays, and Physical Training

Assumptions for TAD, Leave, Holidays, Physical Training							
	Leave		Physical Trng		HOLIDAYS		TAD
RANK	Days/Yr	RANK	(Hrs/Day)	RANK	Days/Yr	RANK	Days/Yr
HSC	10	HSC	0	HSC	10	HSC	0
VADM	26	VADM	0	VADM	9	VADM	5
RADM	26	RADM	0	RADM	9	RADM	5
RDML	26	RDML	0	RDML	9	RDML	5
CAPT	26	CAPT	0	CAPT	9	CAPT	5
CDR	26	CDR	0	CDR	9	CDR	5
LCDR	26	LCDR	0	LCDR	9	LCDR	5
LT	26	LT	0	LT	9	LT	5
LTJG	26	LTJG	0	LTJG	9	LTJG	5
ENS	26	ENS	0	ENS	9	ENS	0
GS15	15	GS15	0	GS15	9	GS15	5
GS14	15	GS14	0	GS14	9	GS14	5
GS13	15	GS13	0	GS13	9	GS13	0
GS12	15	GS12	0	GS12	9	GS12	0
GS11	15	GS11	0	GS11	9	GS11	0
GS10	15	GS10	0	GS10	9	GS10	0
GS9	15	GS9	0	GS9	9	GS9	0
GS8	15	GS8	0	GS8	9	GS8	0
GS7	15	GS7	0	GS7	9	GS7	0
GS6	15	GS6	0	GS6	9	GS6	0
GS5	15	GS5	0	GS5	9	GS5	0
GS4	15	GS4	0	GS4	9	GS4	0
GS3	15	GS3	0	GS3	9	GS3	0
GS2	15	GS2	0	GS2	9	GS2	0
GS1	15	GS1	0	GS1	9	GS1	0
E9	30	E9	0	E9	9	E9	0
E8	30	E8	0	E8	9	E8	0
E7	30	E7	0	E7	9	E7	0
E6	30	E6	0	E6	9	E6	0
E5	30	E5	0	E5	9	E5	0
E4	30	E4	0	E4	9	E4	0
E3	30	E3	0	E3	9	E3	0
E2	30	E2	0	E2	9	E2	0
E1	30	E1	0	E1	9	E1	0
RSA	0	RSA	0	RSA	0	RSA	0
VOL	0	VOL	0	VOL	0	VOL	0

Table 2. Assumptions for Salaries.

Rank	Salary
ADM	\$ 218,519.00
VADM	\$ 209,939.00
RADM	\$ 193,455.00
RDML	\$ 175,056.00
CAPT	\$ 163,343.00
CDR	\$ 140,367.00
LCDR	\$ 126,240.00
LT	\$ 108,199.00
LTJG	\$ 83,672.00
ENS	\$ 67,604.00
GS15	\$ 163,343.00
GS14	\$ 140,367.00
GS13	\$ 126,240.00
GS12	\$ 108,199.00
GS11	\$ 83,672.00
GS10	\$ 83,672.00
GS9	\$ 67,604.00
GS8	\$ 104,083.00
GS7	\$ 88,653.00
GS6	\$ 78,918.00
GS5	\$ 68,746.00
GS4	\$ 48,452.00
GS3	\$ 40,858.00
GS2	\$ 37,187.00
GS1	\$ 33,344.00
E9	\$ 104,083.00
E8	\$ 88,653.00
E7	\$ 78,918.00
E6	\$ 68,746.00
E5	\$ 58,127.00
E4	\$ 48,452.00
E3	\$ 40,858.00
E2	\$ 37,187.00
E1	\$ 33,344.00
RSA	\$ 50,000.00
HSC	\$ 50,000.00
VOL	\$ -

Table 4. Descriptive Statistics for Age Category, Gender Category and Beneficiary Category

Variable	Referred To Net		Seen In House		Total	
	N	Percent	N	Percent	N	Percent
Age Category						
0 – 10	12	10.0%	108	90.0%	120	100%
11 – 20	26	10.9%	212	89.1%	238	100%
21 – 25	24	10.9%	196	89.1%	220	100%
26 – 30	52	9.0%	528	91.0%	580	100%
31 – 35	57	11.0%	460	89.0%	517	100%
36 – 40	53	10.3%	462	89.7%	515	100%
41 – 45	98	10.5%	831	89.5%	929	100%
46 – 50	145	10.4%	1250	89.6%	1395	100%
51 – 55	207	9.9%	1891	90.1%	2098	100%
56 – 60	172	10.2%	1519	89.8%	1691	100%
61 +	199	10.6%	1676	89.4%	1875	100%
Gender Category						
Male	360	10.0%	3247	90.0%	3607	100%
Female	685	10.4%	5886	89.6%	6571	100%
Beneficiary Category						
AD Dependent	219	14.2%	1327	85.8%	1546	100%
Retired	322	10.5%	2735	89.5%	3057	100%
Ret / Dec Dep	467	17.0%	2278	83.0%	2745	100%
Active Duty	37	1.3%	2793	98.7%	2830	100%

Table 5. Inferential Statistics for Age Category, Gender Category and Beneficiary Category

Variable	B. Sig	S.E	Odds Ratio
Age Category			
0 – 10	-0.010	0.322	0.99
11 – 20	0.005	0.226	1.005
21 – 25	-0.063	0.234	0.939
26 – 30	0.178	0.167	1.194
31 – 35	-0.088	0.163	0.916
36 – 40	0.004	0.167	1.004
41 – 45	0.02	0.133	1.02
46 – 50	0.018	0.118	1.019
51 – 55	0.084	0.107	1.087
56 – 60	0.039	0.112	1.039
61 +	(Reference)		
Gender Category			
Male	-0.048	0.069	0.953
Female*	2.199	0.056	9.019
Beneficiary Category			
AD Dependent*	-2.522	0.181	0.080
Retired *	2.186	0.176	1.113
Ret / Dec Dep *	-2.746	0.173	0.084
Active Duty *	-4.264	0.184	0.080

* p < .001

Table 7. Available Appointments for Gastroenterology Clinic

Month	Total Booked Appointments	Total Kept Appts	Walk Ins	Patient Cancelled	No Shows	Total Appointments Available
FY 2002						
October	226	181	8	31	4	37
November	214	169	6	25	9	39
December	161	126	3	15	15	32
January	264	196	10	36	13	58
February	214	178	8	20	6	28
March	250	194	13	31	8	43
April	242	185	18	28	11	39
May	242	200	7	28	3	35
June	279	225	18	28	8	36
July	294	215	16	46	10	63
August	369	294	22	39	12	53
September	320	261	10	41	7	49
Total	3075	2424	139	368	106	512
FY 2003						
October	298	219	23	44	10	56
November	281	209	23	42	7	49
December	239	192	17	29	1	30
January	307	193	79	29	6	35
February	246	157	50	36	3	39
March	281	198	41	37	5	42
April	265	210	19	31	5	36
May	251	198	7	37	7	45
June	216	173	9	28	6	32
July	237	199	12	23	3	26
August	191	157	9	19	6	25
September	272	233	12	22	1	27
Total	3084	2338	301	377	60	442